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GOLD FILLING, A RETROSPECT.

By H. H. Johnson, D.D.S., Macon, Ga. Read Before Southern Branch National Dental Association, at Nashville, July 29-31, 1901.

Since the days when dentistry had a beginning the various preparations of gold have been accorded a place as the most important of materials for filling cavities of decay in human teeth. It is interesting to note the many changes it has undergone during all these years in methods of manufacture and manipulation, each change being made in an attempt to lessen the tediousness of its working qualities and to increase its effectiveness as a tooth preserver. That gold has been able to retain its place in the estimation of operators of all periods as the first and best of filling materials, no matter what form or method be employed, is evidence that it is thus far entitled to the name of king of filling materials as well as king of metals.

Previous to about 1850 gold was employed for "plugging," as it was then termed, in the form of soft or noncohesive foil. It was very desirable that the foil should have no "adhesive or sticky" qualities, but should work perfectly soft and pliable. Hand pressure was the force employed for condensing the "plug," and the wedging principle was used for retaining it in place. Mallet force was not used until some time about 1864. In the *Cosmos*, 1865, in an article by Dr. I. J. Wetherbee, read before the Massachusetts Dental Association, condemning the use of the mallet, he uses these words—"It is but recently or at most a few years only that the mallet has been in use. I think to Wm. H. Atkinson, M.D., then of Cleveland, Ohio, but now residing in the city of New York, is due the honor of introducing it to public notoriety." In speaking further of it he says, "A mallet is a well turned and nicely formed piece of *lignum vitae* or *rosewood*, and is as harmless as quack medicine when let alone."

The cohesive property of gold was known to the manufacturers many years before it was employed by the dentists in that state, but the latter demanded a strictly noncohesive gold and the manufacturers found it difficult to always comply with the demand. Often they had to take back "sticky" gold and work it over again. In writing for the *Cosmos* in 1863 Amos Westcott made the statement that he had accidentally discovered the cohesiveness of gold as early as 1840, by having some sent him by mail with the leaves of paper removed from between the sheets to save postage. The pressure in the mail sack caused the whole batch to stick together, and the manufacturers gave other gold for it, thinking the fault was theirs. He made no mention of nor profited by his discovery, and therefore did not get credit for it as he might have done. A few months later Dr. Louis Jack took Dr. Westcott to task for claiming the discovery, contending that it rightfully belonged to Dr. Robt. Arthur, who on making the discovery realized its importance and immediately made use of it, publishing the fact to the world about 1855, showing that liberal spirit which a strictly professonal man must possess.

This was the first period in the history of gold as a filling material. It was before the dental engine and the rubber-dam, yet it cannot be doubted for a moment that success crowned the efforts of these operators in the greater number of cases treated, even under the trying and almost distressing circumstances under which they labored in those days. Let it be remembered that this is a strong argument in favor of noncohesive gold and hand pressure.

Now comes a new era in which crystal gold and other fibrous cohesive golds made their appearance. The profession took to this new form as the trout seizes the tempting bait on the treacherous hook. It seemed just what they had been looking for—a soft, plastic, cohesive gold that could be worked by hand pressure. It soon proved, however, to be somewhat of a snare and a delusion, many failures rapidly following its use, principally, no doubt, from improper pluggers and inexperience in manipulation.

The third era, about 1863, saw the advent of the rubber-dam, the mallet, strictly cohesive foil and contour filling. Those who were bold enough to experiment with this new process were soon ready to cry out *Eureka!* The old soft foil and hand pressure gradually gave way to the more modern cohesive foil and hand-mallet force.

Then came the improved forms of pluggers, the machine and electric mallets, and from about 1880 to 1890 a man was an old fogy indeed who used anything but cohesive gold and mallet force. Through all these different periods and stages of development it must be remembered that gold persistently held its supremacy as a filling material. With the advent of cohesive gold, however, and the long tedious operations necessary in its manipulation, the tired backs of the profession gradually turned for relief to the once despised amalgam. The state into which the profession had drifted gave this unscientific material a stimulus it had not known before.

But it soon became apparent that these beautiful cohesive jewels, so carefully hammered into place with the most modern pounding machinery, would in some unaccountable way become in many instances undermined by a recurrence of decay, principally at the cervical margins. The scientific investigators of the profession, to meet this last exigency, have resorted to the latest practice of "extension for prevention." It remains for experience to demonstrate what fruits this bold method will bring forth. While not dealing in this paper with cavity preparation, it may not be out of place to state that extension for prevention, in the fullest acceptance of the term as taught by those who practice it, is not concurred in to any very great extent. The cases are not plentiful where it can be practiced with good judgment, and in some of these it should not be done for esthetic reasons.

Let us consider the successes and failures attending the first period of the use of gold as a filling material. The form of gold used at this time was strictly noncohesive and the force exerted for condensation only hand pressure. The practice of extension for prevention could not have been followed, as it would have been impossible to have so shaped the cavities with the excavating instruments then in use. There was but one rule in cavity preparation—break down weak enamel walls, remove decay and make the cavity larger at the base than at the orifice. The gold in ropes and ribbons was packed in by hand pressure and finished by burnishing the surface. Such fillings were remarkably immune from a recurrence of decay, especially at the cervical margin. Where failure resulted it was from a battering down of the surface when subjected to severe attrition, until an exposure of dentin at one of these points would induce decay, either at the occlusal surface or at the labial or

lingual margin. Who of us has not marvelled at the way such fillings have preserved teeth even after the latter have disintegrated to such an extent as to afford lodgement for food stuffs and bacteria in great quantity? To such a degree has this been the case that some mysterious therapeutic value has at different times been ascribed to noncohesive foil.

With the advent of cohesive gold the great annoyance of fillings breaking down from attrition was at once overcome and the ideal seemed for a time to have been reached. This was not to be, however, for ever since the introduction of cohesive gold and mallet force the profession has been harrassed by having these beautiful fillings, which required hours of patient toil from the dentist and stacks of nerve force on the part of the patient, become undermined at the cervical and labial margins and fall out—a welded polished lump of gold, with the support crumbled away as a wall built on a sand foundation.

The prediction is now made, that the next advance will be begun when we weigh the experience of the profession and profit by the principles which seem to have been proven. The high ideal hoped for will not be secured by inflicting undue punishment in burring away the strength and beautiful geometric form of the tooth in trying to get beyond a vulnerable point, but by combining modern instrumentation and skill with the two best forms of gold and the two best forces for condensation. Each of these methods has demonstrated by long experience that it possesses many virtues when rightfully used. This being true, let us use them in combination and reap the benefit of both. Pack noncohesive gold with hand pressure at these vulnerable points, thereby securing unmistakable adaptation, then finish with cohesive gold, thus obtaining the hardness and solidity necessary to resist the force of mastication, and the ideal method for the salvation of teeth, based on the experience of the past seventy-five years, will have been reached. It is not so much the extension of the cavity but adaptation that is most needed, and cohesive gold cannot be adapted to small inaccessible cavities. It is only in broad open cavities that cohesive gold can be successfully manipulated, hence the necessity for "extension for prevention" when this form of gold and mallet force is employed exclusively.

While not ready to make the assertion, the suggestion is advanced,

that many failures of gold fillings from faulty adaptation are due to too much mallet force directly against the cavity walls in beginning the filling. This does not allude to the crumbling of the enamel rods under the blows of the mallet, but because it is going against a mechanical principle to endeavor to obtain an absolute adaptation to a resilient wall by driving a substance of the nature of cohesive foil directly against it with a mallet. Ivory will stand a severe pounding without injury, and at the same time it is the most resilient substance known. For this reason it is selected for making billiard balls and other things requiring this property to a great extent. If a piece of ivory be struck with a solid substance there is an immediate violent rebound, owing to its resiliency. If it be attempted to drive a piece of solid welded cohesive gold against its surface there is a rebound at every blow of the hammer, and the more solid and dense the welded mass becomes the more violent the rebound. It is therefore a practical impossibility to drive a layer of cohesive gold into absolute contact with it. If the process of condensation is not complete there is imperfect contact, and if carried to completion, so as to produce a state of solidity, there is incomplete contact because of the resiliency excited by the blows of the mallet. On the other hand, when steady firm pressure, as from the hand, is applied to a like substance, this resilient property is not excited and the materials may be pressed and packed into absolute contact with it. So, if with hand pressure we pack noncohesive gold into all the vulnerable points and around the cavity walls, until a mass of sufficient thickness to break the force of the impacting mallet has been condensed in this manner, cohesive gold may then be driven into it without the ill effects of the rebounding, as there is a non-resilient cushion to break the force of the mallet.

Discussion. *Dr. Wm. Crenshaw*, Atlanta: If a man could have only one kind, cohesive gold would be the best. I do not agree with Dr. Johnson that it is impossible to adapt cohesive gold closely to the margin of inaccessible cavities, for a large number of men have become expert by practice and can do it successfully. The latest and best method, however, is to use a combination of the two styles of gold. I formerly believed that cohesive gold was the best material for all parts of all cavities, but I now willingly acknowledge that noncohesive gold is the best for cervical margins of fillings. Regarding "extension for prevention," we all know that the point of

contact of the teeth is where decay is most likely to occur, and if the margin of the filling comes at that point there is bound to be trouble. The cavity margin should preferably be half way between point of contact and gum. If it is at the gum line the same objection exists as at the point of contact of the teeth, so it is better practice to extend cavity under the edge of gum than to stop at it.

Dr. Frank Holland, Atlanta: I differ materially from the essayist, for an experience of twenty years with cohesive gold has convinced me that its value as a filling material cannot be surpassed. After seeing the work of Varney, Webb, and others, no one can deny that cohesive gold can be thoroughly packed with hand pressure against the cervical margins of a cavity extending to the neck of the tooth. The combination fillings described have not been successful in my hands, and I fail to see their value, as cohesive gold can be adapted to any case where soft gold could be used. It is sometimes almost impossible to so form a cavity that it will receive and retain soft gold, and the pressure brought to bear on the tooth in inserting such a filling is so great as to endanger it.

Dr. W. V-B. Ames, Chicago: Those discussing this paper seem to recognize only thoroughly noncohesive and thoroughly cohesive gold, but there are many gradations of working quality between the two, and therein lies the opportunity for Dr. Johnson's argument. "Extension for prevention" is what Webb taught years ago, but Dr. Black has amplified and extended it. Approximal cavities should be extended so as to bring the margins safely away from the point of contact and to make the filling of cavities simpler, but all cavities should not be extended to the degree of making them accessible to straight instruments.

Dr. R. K. Luckie, Holly Springs, Miss.: There is such a difference in the quality of teeth and in the way various people take care of their mouths, that no set rule for preparing cavities can be laid down, but "extension for prevention" should be carried out to a certain degree in most cases. In approximal cavities the gingivo-labial or buccal or lingual angles should be extended freely whenever indicated. Better results also come from lateral extension, especially in teeth that are prone to decay. The mere fact of extending the cavity margin below the gum does not always save the tooth at that point, and it is not always so necessary to extend the gingival border.

Dr. W. J. Morrison, Nashville: We often see fillings of noncohesive gold that have been rendering good service and preserving the teeth for twenty or thirty years, but cohesive gold fillings rarely last more than half that time. This would seem to indicate that there is a more perfect adaptation of the soft gold to the walls and margins of the cavity than can be obtained with cohesive gold. Many claim that there is something of a therapeutic value in noncohesive gold that prohibits the recurrence of decay. The use of both styles of gold in combination promises better results than can be expected from either alone.

Dr. Sims: Dr. Holland claims that it is necessary to extend cavities more to receive a noncohesive gold filling than a cohesive one, but I do not think this is so. It seems to me that an approximal filling with a noncohesive base and a cohesive finish can be depended upon to preserve a tooth with less extension than any other filling, because the soft gold so thoroughly protects the margins.

Dr. A. G. Finney, Wilkesbarre, Pa.: I believe better results can be obtained from cohesive gold, and if we should study the nature of this material, and adopt our methods and instruments to its peculiarities, we would get better results.

Dr. W. E. Walker, Pass Christian, Miss.: Many of the failures of these combination fillings are due to the fact that too thick a mat of soft gold is left at the margin. Dr. Black showed me that the continued impact of mastication would still further condense the noncohesive gold under it, and thus allow the cohesive gold to settle away from the margins.

Dr. J. Y. Crawford, Nashville: The difficulty many have in using the different styles of gold comes from the fact that the proper instruments and methods are not adopted. At first we used non-cohesive gold with hand pressure and special instruments, and when cohesive gold was introduced the same instruments and methods were used, so failure of course resulted. There is no doubt that noncohesive gold in contact with the walls and margins of cavities is a better preservative of tooth substance than cohesive gold, and an ideal filling is one that has a foundation of the first and a superstructure of the second. Nowadays many dentists in making these fillings are trying to use the same instruments and methods for both styles of gold, and failures are bound to occur.

A common sense plan in inserting a filling to preserve a tooth is to remove all decay and then so shape the cavity as to best retain the filling, adapting the latter to the nature of the tooth. The usefulness of a filling often depends upon the vitality of a tooth, and decay of a pulpless tooth is not analogous to caries in a living one.

Dr. Johnson, closing discussion: While not condemning "extension for prevention," I do not use it to any great extent. I believe it is Dr. C. N. Johnson who says that a cavity filled so as to have the margin of the filling extend beneath a healthy gum will never show recurrence of decay at that point. Probably it would not if the gum resumed and maintained a perfectly healthy condition, but I have never seen a healthy normal gum margin which extended over the filling.

MANAGEMENT OF THE PERMANENT SUPERIOR INCISORS AND CUSPIDS.

By L. G. Noel, D.D.S., Nashville. Read Before Southern Branch National Dental Association, at Nashville, July 29-31, 1901.

We believe no one will dispute the statement that cavities occurring in these teeth prior to the age of sixteen should be filled with cement or gutta-percha. Tin foil has been advocated by some very eminent authorities, but, admitting its low-conducting qualities and its benign therapeutic effect upon the dentin, it has not the easy working quality nor the adhesive properties of either of the above mentioned materials. It requires as much undercutting to retain it as gold, and it is as difficult to place. At this early age (eight to sixteen) we especially desire to avoid deep undercutting—we wish to remove only the decalcified and infected tissue, and we do not wish to pursue this in the direction of the pulp to the point of its exposure, preferring to trust to the therapeutic effects of our medicaments and filling material to convert this into a natural capping that will not prove inimical to the life and health of the pulp. Another serious objection to tin foil in the front teeth is its color and tendency to blacken in some cases, not only staining the surrounding tooth structure but indelibly pigmenting the gum tissue as well. We recognize the excellent qualities of this for other situations, but for these cases we have something better. Excluding tin brings us to a consideration of gutta-percha and cement.

Before entering upon this we must say a few more words about

cavity preparation. These materials being plastic and easily introduced, we do not need to cut away the lingual wall of enamel for access, as in making preparation for gold fillings, but we desire to leave as much of the enamel margin as will protect the filling from abrasion in the friction of mastication or biting of food. This is an important point to observe in the preparation of cavities for cement or gutta-percha fillings, since the latter are soft and offer little resistance. Gutta-percha, if of good quality and not overheated will, when carefully introduced and well protected by the enamel margins, sometimes last ten years in proximal cavities in the front teeth, and since it has the least power of conducting heat and electric currents of all filling materials yet employed, it is perhaps the best agent we have for proximal cavities in the incisors and cuspids of young patients. The teeth should be well separated with thin, wide separating rubbers that will engage between the knuckles so as not to ride upon the gum septum. This separation should be maintained by forcing a bit of folded cardboard between the teeth until the soreness has subsided. Having obtained a satisfactory separation, and having decided upon gutta-percha fillings, our method of introducing them may be briefly described. We adjust the rubber-dam with great care, because dryness is essential. The edges are carefully everted and tucked under the margin of the gum by the silk ligatures, which are secured by the surgeon's knot. We next select a separator to steady the teeth and maintain the space. The preparation of the cavity is a very simple thing when conducted as above described, our attention being turned to the mere removal of decay and smoothing of enamel margins, no undercuts being required, save such as may be left by this procedure. A bit of cuttlefish tape will be found useful in smoothing the enamel borders. We next paint the whole surface of the cavity with a solution of resin in chloroform. This serves a double purpose—it covers the surface of the sensitive dentin with a coating that protects the freshly cut dentinal fibrillae from irritants, and it affords a glue or adhesive cement for fastening the gutta-percha to the walls of the cavity. This is a decided aid in introducing the first small pellets of material, since they cling to the wall of the cavity and are worked into place without moving.

The instruments for working the gutta-percha are few and simple, and have been too often described in text-books to require more than

mere passing notice here. Such small serrated pluggers as are found useful in working gold will be serviceable in carrying the material into place. For a detailed description of the instruments and appliances needed in making gutta-percha fillings see Flaggs' "Plastics and Plastic Fillings." We cannot lay too much stress upon the importance of not overheating the material, for however excellent it may be when it comes to the hands of the dentist, if heated too hot its color and all other good qualities will be quite destroyed. Many times failure has been due to a neglect of this caution, and the material has been blamed when the fault lay with the operator. The apparatus designed by Dr. Flagg for heating gutta-percha over water and keeping the instruments hot at the same time will be found well worth the money it costs. An oil pad should be kept at hand to oil the points of the instruments so as to prevent the adhesion of material. This will be found especially useful to prevent the dragging by burnishers.

Where the labial or lingual walls of enamel are broken, so that considerable notches occur in them, exposing the filling material to friction, zinc oxyphosphate cement will be found better and more lasting than gutta-percha. Care should be taken in preparing the cavity so as to leave as much of the enamel margin as is sound and resistant. A cement of well known integrity should be chosen, and it should be well mixed and introduced into a dry cavity (the rubber-dam having been previously adjusted), time should be allowed for it to set awhile before exposing it to the action of the fluids of the mouth. We doubt the propriety of subjecting zinc phosphate fillings to the heat of instruments for melting waxes and resins upon their surfaces, and when this is done the filling should first have time to set well. A comparison of cases leads us to think we have obtained probably better results without the wax.

The next question to decide is, when shall the teeth be filled with gold? Several considerations will enter into this decision—First, how is the temporary filling lasting? If it is standing well and maintaining its color and integrity it should not be removed, no matter whether it is cement or gutta-percha. Many a called temporary filling proves to be more permanent than the called permanent fillings. Dr. Flagg has called attention to the fact that failures in gold fillings are always accompanied by extension of the cavities, but such is seldom or never the case with cement or gutta-

percha fillings. We may have a wasting or disintegration of these plastics, but the cavity is left the same size as before. We should not dare risk the employment of gold until such time as the teeth shall have completed their growth, the dentin has become dense, and the mouth is in a thoroughly hygienic condition.

From an experience and close observation of thirty years we have come to the firm belief that in the majority of normally placed teeth it is good practice to cut away a portion of the lingual wall of enamel, leaving a self-cleansing space, and we can deduce some very convincing arguments for this practice. Where sufficient separation is obtained by wedging to place these fillings without cutting away any of the lingual wall, after removal of the wedges the flat surfaces of the fillings come together in such manner as to retain particles of food which undergo fermentation and decay quickly recurs. The lingual enamel is much thinner than the labial plate, and besides being thinner is corrugated and very prone to cleave along the lines of corrugation, so that when cavities are large, leaving these inner plates of enamel unsupported, if they do not crumble under the force necessary to condense the filling, they are sure to split away in sufficient quantity shortly afterward to furnish roughened edges that afford lodgement for fermenting substances, and extension of the cavities is the result. When the lingual borders are cut back somewhat, as described by Dr. Robert Arthur some years ago in his little book on "The Treatment and Prevention of Decay upon the Proximate Surfaces of the Teeth," a permanent separation is maintained and no opportunity is offered for the lodgement of harmful substances. A self-cleansing space is maintained, and a comparison between this and the above described operation will show a result overwhelmingly in favor of the latter method. I have several patients whose front teeth I filled in this manner twenty-five to thirty years ago, and the fillings are as good as upon the day of their insertion. Furthermore, I have had abundant opportunity to observe this durability in similar work at the hands of older operators. It sometimes seems a pity we did not all abide by our first teaching—permanent separation and filling from the lingual side of the teeth with non-cohesive gold—for much of the modern cohesive gold work is far inferior. Fillings of cohesive gold placed at the knuckles of these teeth, first obtaining wide separation and then letting the teeth fall back into place, allowing

enamel margin to meet enamel margin, seldom last as long as five years, and I have seen the cavities extending in six months. The plan of cutting away the lingual enamel entirely, and building all back with cohesive gold may be a little better, but I have seen many sudden failures following such work.

Returning to cavity preparation, we would emphasize and repeat the statement that easy access is obtained by this cutting away of the lingual wall of enamel. The natural convexity of the labial plate will give an anterior retention, besides which little more than straight lines will be needed for other parts of the cavity, but to facilitate the placing of the gold and to ensure its retention there can be no objection to a slight groove along the gingival margin. The nicest care should be given to enamel margins, and here the magnifying lens should be brought into frequent use to see if perfectly smooth margins are being obtained. Just here we cannot refrain from entering our protest against the practice of drilling small pits into these cavities for anchorage—the so-called pot-leg anchor. These are always a menace to the pulp, are tedious and difficult to fill, are unreliable and insecure, it is impossible to know that you have filled them perfectly, and when imperfectly filled they are always a starting-point for new decay. They are unnecessary even when only cohesive gold is to be used, as quicker and more secure anchorage can be obtained by cutting a slight groove with hoe or bur along the gingival margin, slight convexity will be left under the curving labial plate, and all other walls may be left straight or nearly so. There is no reasonable objection to a very slight undercut at the incisive angle. These are sufficient, safe and easily filled.

We should like to make an argument here in favor of noncohesive gold for all simple cavities between these teeth, instead of cohesive. We prefer the preparations of noncohesive gold that are supposed to have that property imparted to them by the deposition of some foreign substance upon the surface, notably the foil made by Abbey. This we believe to be especially indicated in the case of young subjects, and in all cases where the pulps manifest extreme irritability. We believe it to possess a lower power for conducting heat and electricity than the strictly cohesive gold, probably because the interposition of a film of foreign matter between its leaves breaks the continuity. We employ semi-cohesive gold in all cases where

cavities have become so extensive as to require the addition of cohesive gold to their surfaces for the restoration of contour. In cases involving loss of portions of the labial or lingual plate of enamel, or compound cavities extending to two or more surfaces, we may combine foil with pellets or cylinders of strictly cohesive gold.

Discussion. *Dr. T. P. Hinman*, Atlanta: I have always used cement for the front teeth of children but have not obtained so good results as Dr. Noel claims for gutta-percha. I occasionally have a patient whose mouth contains perfect fillings of soft foil put in thirty or forty years before, and I doubt whether many of the cohesive gold fillings inserted to-day will last so long. The use of the mallet force in dentistry has reached its maximum, and from now on will probably decrease, giving way to hand pressure, and work will be better because of it.

Dr. H. E. Beach, Clarksville, Tenn.: I use tin in the case of young persons whose teeth decay before the dentin has reached its normal hardness, and I have never observed the discoloration of the gums referred to by Dr. Noel. If tin will preserve these teeth that are in the formative stage until nature has hardened the tooth substance so that they can be safely filled with gold, it should be used even if the gums are slightly discolored in rare instances by it. I have patients whose anterior teeth when forming I filled twenty-five years ago with tin, afterwards replacing it with gold, and those teeth are well preserved to-day. I have seen fillings of tin on the lingual surfaces that are intact after thirty years of service. Even in using gold I place a mat of tin foil against the cervical wall of the cavity, believing that it has a therapeutical effect in contact with dentin, helping to preserve the tooth from a recurrence of decay. Gutta-percha has not the durability of tin, but when properly used is better than any other plastic filling for children's teeth. Cements are not impervious to the fluids of the mouth, and are readily acted upon when the saliva is alkaline.

Dr. J. Y. Crawford, Nashville: I do not agree that no permanent fillings should be made until the age of sixteen is passed. I would speak a word about the necessity for regularity of the teeth. In almost every case where an incisor in the lower jaw is out of place there is a corresponding displacement in the upper jaw. All misplaced teeth should be put in position before they are filled, as otherwise it is impossible to properly prepare cavity and insert filling.

Dr. J. P. Corley, Greensboro, Ala.: I believe in permanently separating the anterior teeth so that they will not be affected by caries again. Where the proximal corners of incisors are broken down I make a separation and partial contour instead of restoring the contour. I should prefer to cut the teeth slightly apart rather than to see gold fillings in the front of the mouth.

Dr. H. W. Morgan, Nashville: I am much surprised to learn that gutta-percha is impervious to the fluids of the mouth, also that fillings of same can be so easily inserted. In fact, I cannot agree with these statements. Gutta-percha contains oxid of zinc, and I have never removed a gutta-percha filling which did not prove by its odor that it was leaky. I favor the insertion of approximal fillings between incisors, by cutting away the labial plate, and I then do not restore the contour, but give the filling a dull surface by the use of cuttle-fish strips. I use rubber for separating teeth, and believe that those who condemn it do not know how to use it properly. It should not be left between the teeth twenty-four hours, but only six or eight, as this will give all the separation necessary, and gutta-percha will then keep the teeth apart until all soreness has subsided. Two days later they will be in fine condition to be filled. Pigmentation of the gum tissue found with tin fillings is probably due to particles of disks which have penetrated the edge of the gum when the fillings were being inserted, and if they were washed out there would be no discoloration.

Dr. W. E. Walker, Pass Christian, Miss.: As I understand it, Dr. Noel advocates only the removal of the linguo-approximal marginal ridge, which has the effect of increasing or widening the lingual embrasure, thus decreasing the labio-lingual diameter of the middle and cervical thirds of the approximal surfaces without reducing the thickness of the occlusal third and especially not disturbing the natural points of contact. This does not differ from the Arthur system, except that it is limited to the upper incisors. In this location I have used it with marked satisfaction and invariably beneficial results, each year increasing my confidence in it. The only objection to it is the amount of time required to properly shape and polish. The cavity should always first be excavated, so as to leave no doubt as to its limited depth, provided there is objection to this shape, were a filling still to be inserted, though there would be no valid objection to thus shaping the surface and then

filling the cavity, as the liability to recurrent caries at the margin of the filling on a surface shaped as described is greatly reduced, owing to the greater facility with which the surface can be kept polished. It thus partakes partly of the nature of a lingual surface. Dr. Corley asks if I ever cut away this lingual embrasure without touching up the point of contact, and I would say yes, and if the knuckle needs polishing it can be done, but it is not at all part of the operation.

Dr. Noel, closing discussion: I have been somewhat misunderstood, as I should conserve the labial plate of enamel as much as possible in every case. Further, my operation refers only to the superior incisors, as the lower ones are not so liable to decay on their approximal surfaces, and as they are smaller, with contact points close to the cutting edges, they are more easily reached from the front when it is necessary to fill on the approximal surfaces.

INFLAMMATORY PHENOMENA DUE TO AN UNERUPTED THIRD MOLAR.

By J. P. Corley, D.D.S., Greensboro, Ala. Read Before Southern Branch National Dental Association, at Nashville, July 29-31, 1901.

A woman, fifty-three years old, presented for treatment and gave the following history—Three months previous she had felt pain in the region of the right mandible, which grew steadily worse for several days until it became constant and severe, involving the entire side of the face, head and neck. The affected area soon began to swell, and the edema became so exaggerated that the head could not be moved and the eye on that side was closed. The patient was prostrated, and her temperature rose to 104 degrees. The attending physician, realizing the obscure nature of the case, called in a rhinologist, who, after an examination, stated that the post-nasal, antral and auricular regions were in a perfectly normal condition. A dentist next examined the case, and from the subjective symptoms he suspected an unerupted third molar. An examination, however, revealed no clue to such fact. The extreme swelling, inducing partial ankylosis, made examination unsatisfactory. The patient's condition grew alarming, as she became unconscious and remained so for four or five days.

The surgeon who was in consultation made a free incision through the masseter muscle at a point opposite the maxillary tuberosity.

There was a free discharge of congested blood, but it gave no relief. Then the dentist made an incision on the inside of the mouth in the internal angle of the ramus, but without result. After this the surgeon made the external opening deeper, and there was a liberal discharge of pus. Then the patient began to improve, and after a few weeks had sufficiently regained her strength to make a trip to Sewanee. Her physician there kept the incision open with drainage, and made daily injections of peroxid of hydrogen. Whenever this was not done the swelling and pain would return. A surgeon from Nashville was consulted and made some explorations with a bistoury, but found nothing except a hard substance which he took to be necrosed bone. He made a free opening into the mouth well back on the border of the alveolar process, and injected peroxid into the internal opening also. All efforts, however, to divert the pus from the external incision were futile. The physician in charge, who is one of the most scientific men in the profession, came to the conclusion that a third molar must be at the bottom of the trouble, so he brought the patient to me.

Upon examination I found that the mouth contained a full upper denture and the six lower anterior teeth, the rest of the lower teeth having been lost for a number of years. The mass of connective tissue which had formed in the buccal region prevented the mouth from opening to its normal extent, but I found the sinus which the surgeon's bistoury had made and which had been repeatedly opened for the purpose of injecting peroxid. I introduced a probe and some distance from the surface struck something which gave the characteristic feel of enamel. I therefore enlarged the opening and packed with a cotton tampon. An examination of the extra-facial fistula revealed the presence of a number of fistulous tracts radiating in several directions. It was necessary to follow the peroxid injections with a blunt probe to allow the free escape of the effervescing discharge. I kept up the tampon dilations, together with a little cutting away of the tissues, until the anterior buccal cusp of the tooth came into view. I was then able to outline its crown and found that its position was upward, inward and backward, instead of forward, as is usually the case. The patient had been under a tremendous strain for three months, and in consequence was extremely nervous and hysterical, which made the work trying to both patient and operator. Cocain was used freely, but owing to

the abnormal condition of the tissues its effect was limited and unsatisfactory. An application of nitrate of silver was made after each operation.

When sufficient of the soft tissue had been removed to expose the supra-alveolar portion of the crown it was seen that only the anterior half of it was above the process. A portion of the latter was therefore cut away and an effort was made to extract the crown, but the beaks of the forceps could not grasp it sufficiently to bring much force to bear. Furthermore, the mouth could not be opened wide enough to make the application of traction in the long axis of the tooth, and for the same reason it was difficult to use a right-angle bone drill. After consultation with the surgeon I dissected out practically all of the connective tissue in the following manner—The parts were injected with cocain, artery forceps were snapped on, and the tissues were quickly enucleated. Peroxid of hydrogen was dashed in to check the hemorrhage, and the entire side of the mouth was packed with sterilized cotton. The enucleated mass presented a number of radiating sinuses.

At the next sitting I endeavored to extract the tooth, but in vain, and in a fit of desperation I locked the beaks of a pair of cow-horn forceps around the crown and pulled it off bodily on a level with the roof of the pulp chamber. The pulp had a reddish brown appearance and gave no response when a broach was introduced. There was no evidence of putrefaction in or around the tooth. The wound was again packed, and a sitting arranged for next day, at which time a right-angle drill was used to cut a slot down through the alveolar process between the labial plate of the bone and the roots of the tooth. The blade of an elevator was then introduced, and by a twist of the wrist the root was lifted out. A small, round posterior root was present and possessed a perfectly normal exterior appearance, but the anterior aspect showed a coalescence of two distinct roots with three or four canals. On the apex there was a small exostosis which was apparently the only structural abnormality. Upon probing the alveolus I gained no information, being disappointed in the search for a sinus or fistula leading out to communicate with the extra-facial fistula.

The patient made a rapid recovery, and is now, ten months after operation, perfectly well. There is a slight scar, but no depression. Removal of the mass of fibrous tissues and sinuses perhaps prevented

contraction of cicatrix. The clinical history of the case is unique and its cause obscure. I am reporting it in the hope of gaining either by discussion or through the dental journals some knowledge of its etiology.

Discussion. *Dr. J. J. Sarrazin*, New Orleans: I saw the tooth in this case, and concluded that the bulb at the end of root was not an exostosis, but most likely a serumal calculus, as the fact that the tooth was entirely surrounded by and buried in the alveolus would preclude the formation of a salivary calculus. The trouble may have been caused by this calculus. I cannot imagine why the first incision in the neighborhood of the parotid gland was made, as it could not reach the locality involved.

Dr. A. R. Melendy, Knoxville, Tenn., asked if the X-ray apparatus would not have located the unerupted tooth at once and have furnished a clue to the cause of trouble; and *Dr. T. P. Hinman*, Atlanta, replied that within three minutes the tooth could have been located with the X-ray so that the operation for its removal would have been definitely determined.

Dr. S. W. Foster, Atlanta: I long ago learned not to attempt to extract by ordinary methods an impacted third molar which was imbedded in the alveolus. My method is to cut away the alveolus over the tooth with a fissure bur, freeing the tooth, so that it can be easily lifted out.

Dr. J. E. Chace, Ocala, Fla., asked if there was any indication of uric acid diathesis in this case to account for the formation of the calculus on the root of the tooth, and *Dr. Corley* answered that there was none, either in the patient or in her family.

Dr. W. E. Walker, Pass Christian, Miss.: I would ask if any saliva came from the fistula. In surgical works the word fistula is used to describe an abnormal canal for a normal fluid while a sinus is an abnormal canal for the discharge of fluids such as pus, resulting from diseased conditions. The appearance of the calculus would determine whether it was salivary or serumal, and if the former, the saliva must have had access to the tooth.

Dr. H. E. Beach, Clarksville, Tenn. I had a case which was somewhat similar to that of Dr. Corley. A woman wearing artificial teeth came to me suffering with a pain which her physician had pronounced neuralgia arising from her state of pregnancy. I found an enlargement in the angle of the jaw, and upon lancing it

secured a copious flow of pus. I therefore diagnosed an unerupted third molar, but on account of patient's condition thought any operation should be deferred, so simply dressed the wound and dismissed her. She was all right for a time, but a few weeks later the trouble returned and the pain was so severe that it seemed best to remove the tooth at once. I therefore enlarged the incision already made and dissected away the overlying tissue, then with a fissure bur cut the process from around the tooth, uncovering it. I found it lying with its crown pointed toward the ramus of the jaw, and easily lifted it out. Dr. Corley was very fortunate as well as skillful in the treatment of his case, and I think he has asked some pertinent questions.

FRACTURE OF THE JAW—REPORT OF TWO CASES.

By H. H. Johnson, D.D S., Macon, Ga. Read Before Southern Branch National Dental Association, at Nashville, July 29-31, 1901.

I report these two cases with the hope of aiding some one by method and suggestion who may be called upon to treat those suffering from similar accidents. The first case was a fracture of the superior maxilla of a boy thirteen years old from a gunshot wound. The bullet entered at the end of the nose, high enough to miss the apex of the incisor teeth. It ranged in a glancing direction towards the unerupted cuspid tooth, and evidently hit it squarely, as it carried the latter through the cavity of the antrum and lodged it in the posterior wall. The boy was carried to the office of a surgeon, who made an incision in the cheek opposite the point where the bullet had been located and removed the cuspid tooth. While he was attempting to remove the bullet it in some way fell back into the deep cavity of the bone, and was not afterward located or removed, as he did not have access to an X-ray apparatus.

There was a complete fracture of all that portion of the bone containing the bicuspid and molar teeth, and it was entirely detached from the main body of the bone and had dropped down, being supported only by the soft tissues of the mouth and the muscles of the cheek. The sockets of the teeth were not much disturbed, as all the teeth were firmly rooted in the detached portion of bone, except the first bicuspid which was knocked loose and hung merely by a membranous attachment.

After the surgeon had carefully removed all the fragments of bone

from the track of the bullet I was consulted as to the possibility of saving the teeth and the piece of bone containing them. I hurried to the surgeon's office, and found the patient still under the influence of the anesthetic. After making a hurried examination, and obtaining the facts as above stated, I decided to make a splint for the teeth, but realized that it had to be done in a hurry. I therefore took an impression in modelling compound and made a model, but after obtaining the latter I found that in pressing the material into position I had slightly misplaced the broken parts. This was corrected by sawing the model at the point of fracture, fixing the displaced portion in position, and again fastening the model together. Dies and counterdies were made, and a gold splint was swedged to fit over the teeth in the arch, extending from the second molar at the point of fracture around the arch to and including the incisors, which, being strong and firm, were to act as the support for the broken and displaced part. The teeth were dried off and the appliance cemented firmly to place. I was careful to press it into the exact position on the incisors, as this was the only guide to the natural position of the fractured body of bone. To prevent the displacement of the splint by having it accidentally bitten against, a vulcanite support was constructed a little thicker than a gold splint and cemented onto the bicuspids and molars on the other side to raise the bite.

The patient was very comfortable with his splint on, and it was allowed to remain in place six and one-half weeks. At no time was there a rise in temperature of more than one degree. When the splint was removed all the broken parts were found firmly united, there was no irritation of the soft tissues of the mouth, and everything presented a perfectly normal condition.

The second case was the fracture of the outer plate of the inferior maxillary bone, including the four incisors. This plate of bone, representing one-half of the sockets of the teeth, was split off, carrying the teeth attached to it, but there was still an attachment of soft tissue. The parts were put back in place, and the broken plate of bone had a sort of dovetail and fitted so firmly into place that it was not deemed advisable to make a splint. The success of this case was very gratifying, as it healed perfectly and left no visible scar.

Discussion. *Dr. J. E. Chace*, Ocala, Fla., asked if the impression of the lower jaw had been taken to make sure of the occlusion.

Dr. Johnson replied that he had not been called until the patient had been under ether for two hours, and there was then no time for him to think, but fortunately the articulation was perfect.

IMPROVED METHOD OF APPLYING ALUMINUM LINING TO RUBBER PLATES.

By W. T. Magill, D.D.S., Rock Island, Ill.

There have been several methods advocated for this purpose, but until now I have never found one which gave entirely satisfactory results. Having had almost invariable success with the following procedure, I give it to the readers of the Digest. Pack and flask the case as usual, wet a piece of thin cotton cloth in hot water, and place it between the cast and rubber. Have the flask and rubber warm, put the case under the screw-press for a few minutes, take out and separate flask, remove cotton cloth, and apply the liquid aluminum mixture direct to the rubber. The chief advantages of this plan are, that the lining does not penetrate the plaster, and when vulcanized it comes out bright and clean, and very little burnishing finishes the case.

AMPUTATION OF THE ROOTS OF TEETH TO CURE ABSCESS.

By Gordon White, D.D.S., Nashville. Read Before Southern Branch National Dental Association, at Nashville, July 29-31, 1901.

I first performed this operation for a lawyer in October, 1886. The whole upper portion of the root was denuded of its pericementum, and the anterior plate of the alveolus was gone down to a narrow strip at the gum margin. I informed the gentleman that the only thing that I could do was to amputate the denuded portion, but that I had never performed the operation and had never heard of its being done. The patient consented, however, so I split the gum over the tooth and examined the root, beginning at the apex and proceeding towards the neck of the tooth until sound tissue was reached. At that point I amputated the root with a fissure bur, and with a new finishing bur polished off the end of root that was left, then packed the opening with a little sterilized gauze and treated it about four times, after which the patient left the city. I performed a similar operation in May, 1891. In both cases the teeth are in

position and doing good service to-day, as you can readily see from the models which I exhibit herewith and which show the present condition of the gums and teeth. When I performed the first operation there was nothing in dental literature describing such a procedure, so as far as I knew at the time it was entirely new.

Discussion. *Drs. J. P. Corley, H. H. Johnson,* and *W. E. Walker* had each performed this operation successfully in several instances and recommended it. *Dr. Johnson* had performed it in one case of a central incisor, afterwards crowning the root, and it was still doing good service. *Dr. Corley* asked *Dr. White* whether he would leave the root if a portion of it was denuded clear down to the gum. *Dr. White* replied that in his first case the distal surface of the root was denuded clear to the gum margin, but he cleaned out the pocket and treated it just as he would pyorrhea, and, as the model showed, the tooth was still in position.

Dr. H. E. Beach, Clarksville, Tenn.: In all straight-rooted teeth, when it becomes neeessary to amputate part of the root, the better plan would be to remove the tooth, cut off the diseased part, fill the canal, polish the end, and replace the tooth in its socket. This could be done more quickly, with less pain to the patient, and with more certainty as to result, than the operation described by Dr. White. Every preparation should be made beforehand so that each step should be done antiseptically, the root should be filled with some metallic material, and a retaining appliance should be worn for a few days to hold the tooth firmly in its place.

DENTAL EDUCATION.

By S. H. Voyles, D.M.D., St. Louis, Mo. Read Before the St. Louis Dental Society, April 2, 1901.

That ever-present spirit of progress with which each human being is endowed urges us on and on towards the ever-vanishing phantom of perfection. Each difficulty surmounted, each task completed, fills us with a desire to attain the ultimate. All that we use and all that we learn in our efforts to advance may be termed our education. The little hoard of facts and fancies which each generation inherits from its predecessor is appropriated by the individual according to his industry and receptive ability, to add to if he will. That the larger number of men choose to nurse their inheritance and to enlarge it by industry is the genesis of the world's advance-

ment. The same desire to acquire and perfect along the lines of least resistance, which in human actions is the line of adaptability and environment, has led to specialization, with a better knowledge on the part of the specialist than is possessed by the average man.

The discoverers of new truths and the delvers after forgotten ones have accumulated an ever-growing mass of facts that no one man can master. Recognizing that each trade, art or science may be carried to its highest perfection by the special and exclusive efforts of its followers, governments have given peculiar privileges to special lines of action, holding that the combined and individual results will be for the good of the general public. Our own profession (for it is or should be a profession) enjoys special privileges, the grantor thereof by its agents exacting that each member shall have a minimum qualification equal to a supposed average. Owing to the fact that the dentist's education is gleaned from so many of the trades, arts and sciences, his classification is difficult and unsatisfactory.

The ever-growing demands on our knowedge and skill call for constantly increasing teaching facilities in our dental colleges, but the earnest practitioner will always find his college training deficient, since his must be the shop wherein new ideas are molded into imperishable truths. Dr. W. A. Evans has aptly said, "The time is quite recent when the demand in the smaller towns was for a dentist—not necessarily a good dentist. The community needed dental help; there were large stretches of country without a dentist, and there was therefore a call for one. No matter what his ability, there was a reward for a man who knew more about teeth than did the average citizen in the town. That time, however, has passed, and the reward is for the good dentist, so educated that he may continue to develop."

While we are all united in that we must be better educated, we are divided as to which one or more special lines of study should be extended. First are those men who hold that we should all be doctors of medicine, with a special post-graduate course in dentistry. Second come those who hold that "theory" is given too much attention, and that we should rather be more finished artisans. There is a third class, in which your essayist begs to be included, which believes we should be and are a distinct profession, numbering each man as skilled in hand and mind.

The course of life is through a jungle of intervening struggles, rising hopes and crushed ambitions, and each man must hew his own pathway, plucking from each tree of knowledge that which may sustain and aid him to good achievement. No science or profession has an exclusive right to the knowledge that is general to it, as applied to a distinct and separate one. Because we apply to our work much that is included in the education of the physician and surgeon is no reason why we should be graduates in medicine. That we use some of the methods of the molder and of the sculptor is no sign that we should be members of the molders' union or graduates of an art school. Concentration is the germ of progress, and I believe that we should appropriate more of medical knowledge than we have in the past, but to take all would be a dangerous division of effort. Experience has taught that the average man can best attain manual dexterity, which is an absolute essential to a successful dentist, during the few years about maturity. Financial necessity decrees that he must compress his preliminary mental education into the same short period. How best to harmonize the two, that each shall be sufficient, is the problem confronting us.

Every operation on living animal tissue should be for supplying lost tissue or improving impaired function, and to be successful it must be performed with a full knowledge of the laws governing animal life, and of the cause of the imperfection and the best known remedy therefor. In times past, and let us hope forever past, the dentist confined his operations to the hardest tissue in the animal body, and one per se practically unchangeable. In our present enlarged and growing field of action, however, we must be prepared to aid in the rejuvenation of practically all tissues. Let us not feel that because our field is limited as measured in inches and our mistakes are seldom fatal we do not need a comprehensive and profound knowledge of the entire physical system. That wonderful process of assimilation of dead food into living tissue, and from that into dead waste, is as marvelous and as constant in the dental pulp as in the muscle or softer brain tissue. That grim struggle within our bodies between the white corpuscles and the invading microorganisms should be as interesting as a war of nations. It is waged more relentlessly—no laws of civilized warfare, no red cross for the wounded, and no white flag for the conquered—nothing but extermination, and it may be of you or of me.

It is not a necessity for the dentist to know the symptoms, etiology and treatment of all the diseases of the organs and tissues of the body, but he should know most thoroughly the physiology of the body and perhaps less thoroughly its anatomy. He should know much of pathology and chemistry, but he need not take either in such detail as must the medical student. The general laws should be most thoroughly inculcated, and in later years he may add to the knowledge which other duties compelled him to abridge in his college training. It is given but to the master minds to grasp the sum total of human knowledge and to use each and every portion in the accomplishment of great deeds. The man of medium mold must concentrate his aims and his efforts. Growth can take place only after assimilation. There is only one histology and one pathology, but each is a great study in itself. The student with average mind and time, who wades through the whole course of these studies without the training and the experience necessary to know and extract that which is needful and helpful to his future special work, is apt to come out with his vision dimmed and his mind spattered with the overabundance of knowledge. In these branches of science the facts not necessary for the dental student should be sifted out, and the remaining and helpful ones should be so arranged that they could be readily grasped and understood by him. With this as a foundation the practitioner could build up his knowledge as his needs and desires might dictate.

Empiricism has been the weight about the neck of dentistry. The history of folk-lore and legends, as handed down from generation to generation by word of mouth and crude drawings, is very like that of dentistry. We have been too prone to follow in the footsteps of the honored ones without knowing why or where we were going. Effects have been ascribed to wrong causes, and great results have been too often mere literary delusions. Our literature has been vague and almost exclusively deductive, and the dental profession has been about the last to adopt the Baconian idea of scientific research. Much of our literature has been founded upon the work of skilled mechanics who were without the mental qualifications for true reasoning. We have promulgated laws of procedure without a sufficient number of preliminary truths upon which to base such laws. Nevertheless, no one conversant with dentistry as it is to-day and as it was yesterday should feel discouraged.

Great deeds have been accomplished, although they but emphasized our imperfections and showed still greater tasks before us. Every man, be he ever so humble, is a teacher—no individual is without some influence on someone else—yet good teachers are as rare as poets, of whom it has been said that "The receipt for making is in the safekeeping of nature and the foreordaining stars."

Our dental colleges are passing or have just passed through the changes of supply and demand through which the profession has passed. The time was when the field was new and the demand was for a college—not necessarily a good college—and teachers were selected exclusively from stockholders and inexperienced graduates, regardless of their ability as teachers. A good dentist is not always a good teacher. We all do many things intuitively—a case where the subjective mind usurps the motive power of the objective—but the teacher is he who can trace each idea to its home and call it forth at will to obey his commands. As the demand for dental colleges has been supplied, so the need for improved colleges will be met, and those at the head will put forth efforts to secure good teachers, which demand will be met by studious, thinking practitioners—men who can realize and understand the lack of knowledge of those to be taught, and who can show understandingly the value and practical bearing of all things taught. Without such aid the student in his ignorance would not appreciate until too late.

The laying out of an ideal dental curriculum requires a grasp of and a judicious selection from as broad a field as in any calling known. With the appreciation of this fact by a larger per cent of our profession, the schools affiliated with state institutions and the larger universities will be prepared to offer and enforce a fuller and much better selected course of study, and the smaller schools then must follow suit.

The work of a few great men during the last decade in subjecting old and established procedures to the flame of scientific investigation has led to a recasting of opinions and is the rift in the clouds through which we see the rising sun of dental science. We have advanced and grown in the past by hard work and grim determination, even though our methods were crude. Now that we know how to work, how to experiment, and how to join cause and effect, we can uprear our heads among scientific men and be well worthy of our place. Given a good preliminary education, teach the dentist the beauty of

nature's great manifestations and how to use them, and he will start in life with a solid foundation and a desire to broaden himself in all directions, and will be a man among men, a gentleman, a scholar and honored in his sphere.

PROSTHETIC DENTISTRY.

By A. G. Rose, D.D.S., Cincinnati. Read Before the Cincinnati Odontological Society, Feb 22, 1901.

What can we look forward to in prosthetic dentistry for the coming century? The abandonment of the present form of dentures is not likely, and nothing but continued and persistent effort on the part of the dentist in saving the natural teeth can stay the demand for the artificial ones. We celebrate today the birthday of the greatest American—George Washington. His artificial teeth, carved out of one solid piece of ivory for the upper and one for the lower set, the two being held together by means of a spring, are one of the noted relics of this country. Artificial teeth made from porcelain were doubtless unknown and perhaps not thought of in his day.

In this connection I would state that nothing is harder for this generation to understand than the changes in the condition of man which have come about in the last hundred years. The average American mechanic of today is in many respects better circumstanced than was any king of a century ago. He eats more wholesome food, has more conveniences, derives more satisfaction from living, when sick has the benefit of medical and surgical science that was then unknown, he knows facts of nature and science not dreamed of in 1801, also how these facts may be used to most advantage, he is likely to live longer and is certain to live better.

At that day dentistry had not come into existence. Barbers pulled teeth on occasion just as they let blood, and the only remedy for an aching molar was to have some one drag it from the jaw. The principal dental instrument was the key, a contrivance which inspired a dread upon sight. With this the tooth was loosened, and lucky indeed was the victim if three or four were not pushed out before the offending member was reached. Artificial teeth were carved from ivory, as per the description of Washington's set, and in order to use such plates it was necessary to have all the natural teeth extracted. Contrast this cumbrous piece of mechanism with the denture made today. The great work accomplished along the lines

of operative dentistry in the care and saving of the natural teeth has taken largely from the necessity for artificial ones. If the dental profession were to cease for even a short period of time its operative procedures the demand for artificial teeth and plates would be enormous.

Prosthetic dentistry has called to its service materials from the mineral and vegetable kingdoms. The denture most dear to the artistic eye, continuous gum, has been carried to a high degree of art, and even perfection, but it lacks the requisite strength. One of the most beautiful dentures ever made by the profession was called "rose pearl," and was composed entirely of porcelain. The lack of strength is no doubt the reason, rather than the difficulties attending the construction, why these porcelain dentures have fallen into disuse. However, there is always a demand by the public and a desire on the part of the dentist to reproduce the natural tooth structure in appearance, as witness the work going forward in porcelain inlays, crowns and bridges, the reproduction of natural forms in gum teeth, etc.

In former years the dentist prepared his materials for making teeth, ground his kaolin, silex and feldspar, made his molds, carved the blocks, and while producing a heavier set of teeth he certainly obtained a denser porcelain, one bearing the subsequent firing and grinding better than the porcelain teeth sent out by the manufacturer of today. Recognizing the delicate nature of the manipulations, and the long experience necessary to attain to any considerable degree of excellence in the various processes connected with their manufacture, I still hope for greater improvement in the teeth. They should not so readily pull away from their fastenings or break so easily while a denture is being constructed. Dr. Kingsley states that all porcelain which is used in the manufacture of teeth in this country is porous to a certain extent. This may be tested by exposing them to a higher heat than that at which they were fused, and you will then see how much smaller they become and how much more dense. The material has not been lost, but has been condensed. A little heat more or less changes both shape and color, which gives the enormous variety now available. The English teeth are more dense than the American ones, and there is not so much shrinkage to them. Our manufacturers should endeavor to overcome this defect.

Discussion. *Dr. F. A. Hunter:* The essayist made one misstatement, as "rose pearl" was not porcelain but vegetable in its composition, belonging to the celluloid class. I wish to speak of the use of clasps for partial plates, where one, two or a dozen teeth are to be supplied. The practice ordinarily observed of fitting a broad clasp around the remaining tooth or teeth inevitably results in injury to same. This, combined with the method of making the plate hug the necks of the teeth as closely as possible, is a most reprehensible practice. Plates should be trimmed away so as not to touch the teeth, and a band or clasp should fit the broadest part of the tooth, away from the gum, so that when the plate comes to imbed itself somewhat in the tissues the clasp will not bury itself in the gum and cause lasting irritation. Some time ago I made for my own mouth a partial plate which is provided with a standard and a lug extending over the end of the teeth in such manner as to prevent the plate from burying itself in the gum tissue. In order to obtain space for such a lug I frequently grind into a fissure on the occlusal surface of a bicuspid, so that there will be no interference with the articulation of the teeth.

Dr. Grant Molyneaux: Many dentists seem to have no appreciation of the practical requirements of a clasp. More harm than good may result from using a metal which is not sufficiently elastic. It is a nice point of adjustment to have the clasp thin enough that it will spring over the bulbous part of the tooth, embrace it with perfect accuracy at a point where it will neither slip up or down, and be strong enough to endure. The teaching that platinum should enter into the composition of the clasp coming directly in contact with the tooth, in order to prevent decay, is wholly erroneous. I affirm that platinum aggravates decay if anything. It is electro-positive in its relation to the tooth, which must suffer if there be any tendency towards galvanic action. A gold clasp is not so favorable to the destruction of tooth substance. It often becomes discolored and then all electrolytic action ceases, as a condition of polarity exists. It is contrary to accepted theory to place an amalgam filling where it will come in contact with a metal clasp, but I believe such procedure is the very thing to insure against the destructive action of electrolysis. The mercury in the amalgam will form an oxid on the clasp which precludes the likelihood of further galvanic action. In applying nitrate of silver to the necks of sensitive teeth I

have noticed that if there is an amalgam filling in proximity a very black oxid will be deposited on the surface of the tooth. Regarding that as a positive advantage, I sometimes use old scraps of amalgam, except those containing copper, in combination with nitrate of silver when making an application to sensitive spots on teeth, and it wears a long time.

Dr. O. N. Heise: I would deprecate the practice carried out by so many of fitting clasps to the plaster teeth of the model, as they cannot be properly fitted in that way, any more than a regulating appliance can be. Dr. Molyneaux claims that we can fit the clasps to a metal model with perfect accuracy, but I maintain that clasps should be fitted to the teeth in the mouth. I regard Dr. Molyneaux's claim, that nitrate of silver in the presence of a metal clasp stops electrolytic action, as mere theory. I have built up badly broken down teeth with amalgam and covered them with a shell gold crown, and they have been lost through electrolysis. Again, I think platinum is the best material for clasps, provided a good adaptation to the tooth is secured, as it is more kindly accepted by the gum tissue than is gold. We look everywhere to find some explanation of decay and of electrolytic action, when after all the matter is simply and solely a failure to thoroughly adapt the metals, especially as regards fillings. I do not believe that copper amalgam has any therapeutic effect on dentin or that it renders the teeth impervious to decay. Gold will accomplish more than any amalgam if sufficient pains are taken with it.

Dr. Molyneaux: Dr. Heise has made an extreme application of my statement, which was offered as a suggestion for ameliorating distressing conditions pending the opportunity to do something better. The case he cites of a tooth built up with amalgam and crowned with gold is not to the point. There we have all the conditions for a dry cell, and consequent electrolytic action. I spoke of cases where all the parts are exposed to the fluids of the mouth and where the oxidization of one of the poles of a battery must inevitably result in the cessation of galvanic action.

Dr. Frank W. Sage: When I was a dental student it was the fashion to decry mechanical dentistry. Rubber-dam had just been introduced and the profession was going crazy over contouring with cohesive gold. The introduction of vulcanite a few years before had created a feeling in the profession that mechanical dentistry

was unworthy of serious consideration. The word "nasty" was applied to express an unreasoning antipathy against rubber, which had robbed the dentist of an important source of income. The fact that some one must provide plates for the dentist's patients could not be altogether evaded, but the sentiment was that any fourteen year old boy could learn in a few weeks "to boil rubber." About this time "fine" operators began to loom up, men who did nothing but fill teeth and who announced with pride that they had given up forever the making of plates. What wonder was it then that we students regarded mechanical dentistry as something which had been unwarrantably foisted upon the profession, and that in the dental colleges the mechanical branch actually fell into disrepute. However, as time went on I for one began to suspect that mechanical dentistry was not wholly unworthy, and now after long years I have a positive conviction that the dentist who expects to fulfill the reasonable requirements of his patrons must pay considerable attention to prosthetic dentistry. Indeed, in order to succeed in this branch of practice one needs to combine with a fine manual training, the utmost judgment and discrimination, quite apart from the mere operator's knowledge. I have been surprised to discover the lack of color sense shown by some of our best men in their selection of artificial teeth. The habit of observation and learning therefrom is lacking in many persons to an astonishing degree. For instance, a dentist may spend hours in the endeavor to match a natural tooth or teeth, when if he were a close observer he would perceive that the match was not the thing required at all. Let him place his patient across the room and try first this tooth and then that, and it may dawn upon him that the desired result is not a question of matching an individual tooth but a general effect.

Dr. E. J. Waye: I understood Dr. Rose to say that in order to insert an artificial plate and teeth carved from ivory all the natural teeth must first have been extracted, but I have seen an ivory set which supplied only the bicuspids and incisors.

CROWN WORK.

By H. H. Johnson, D D.S., Macon, Ga. Read Before Southern Branch National Dental Association, at Nashville, July 29-31, 1901.

There are so many systems of crown work that at first thought it would seem almost superfluous to add another, but when we remem-

ber that we have not in all the number what might be termed an ideal bicuspid crown, we feel justified in attempting an improvement. The Richmond bicuspid crown is strong and durable when well made, but has the objectional feature of a great display of gold about the occlusal surface, furthermore the facing is liable to be checked in soldering.

With the consent of Dr. J. Y. Crawford I herewith present one which should rightfully be termed the Crawford crown, and it will be found to be almost if not quite the ideal crown. Dr. Crawford has worked it up by embodying some of the old Richmond ideas with original ones of his own. It is made as follows—The root is prepared by grinding it off about even with the free margin of the gum, avoiding any oval or round shape at the end and removing any bulging shape at the sides. The canals are then enlarged for the reception of platinum posts, not forgetting to ream out with a large bur the orifices into a counter-sink. A band is carefully fitted about the circumference of the root, to which a flat top is soldered, forming a cap. This flat top is placed on the root and burnished down into the counter-sunk orifices of the pin holes. The holes for the pins are now punched at the indicated spots, the pins placed in position, the whole removed and the pins soldered in place from the upper side, filling the counter-sunk holes about the pins flush with solder. The cap and pins united are now placed back on the root and a bite and impression taken, from which an articulating model is made and mounted in an articulator.

The gold cap is now on the model which represents the mouth, and the pins are left projecting above the surface of the cap. Grind these off even with the top of the cap. The tooth is now selected, and it must be a vulcanite bicuspid. Adjust this to a proper occlusion by grinding off perfectly flat at the base, allowing it to fit flat against the top of the gold cap. Now with a strip of thick tinfoil take a measure of the circumference of the bicuspid tooth and make a gold band deep enough to reach to the grinding edge on the palatal side. Trim the band down to a narrow strip on the buccal side, press the tooth into this band and burnish the edges to a perfect adjustment. While the tooth is still inside it, grind or file off the base of the band flat and even with the base of the tooth. Remove the tooth and place the band, narrow edge front, on the gold cap and solder together with a minimum amount

of solder. If the band fails to fill out to a proper contour on the the palatal side, this deficiency may be remedied by thickening with solder at that point. After polishing the cap and band, the crown is completed by cementing the porcelain bicuspid firmly into place in the half cup which was soldered to the root cap. When this has been allowed to set hard out of the mouth it is ready to be cemented onto the root in the mouth and the job is completed.

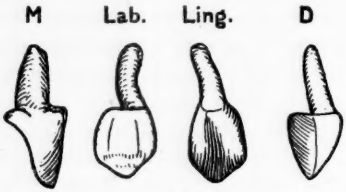
We now have a very strong, natural looking crown, with a proper occlusion and showing a minimum amount of gold. The final result of the work is never in doubt from the beginning, as the porcelain tooth never goes into the fire and there is no checking or other failure. This description of the method may appear somewhat voluminous, but it should not deter anyone from attempting to use it, as in practice it will be found not to take longer than the making of a Richmond crown, and in many ways it is more satisfactory.

NORMAL SOLUTIONS.—A normal solution of any substance is a solution in which that substance exists in the proportion of its molecular weight in 1,000 *parts of water. Sodium hydroxid, NaHO, for instance, has the molecular* weight of 40, hence a normal solution of the substance contains 40 parts sodium hydroxid in 1,000 parts of distilled water. A centinormal solution contains one one-hundredth, and a decinormal one-tenth of that amount —*Ex.*

EMPYEMA OF CAVITIES OF FACE.—By P. Braunschweig (*Muench. Med-Woch.*) The commonest cause of the inflammation of the accessory cavities of the face is catarrh of the nose, or, in fact, any suppurative disease of the nasal cavity. In cases of disease of the frontal sinus with perforation into the orbit, the eye may be extensively dislocated without much alteration in its visual powers. Occasionally the cornea or the anterior portion of the eye, as a result of pressure and exposure to purulent secretion, becomes ulcerated. The following case shows the method of treatment in this condition. A man of 22 developed a swelling in the upper internal angle of the right eye, which was incised, and from which a considerable amount of pus was evacuated. Two years later the swelling again appeared, and was diagnosed as dropsy of the right frontal sinus. This was relieved by puncture, but nine years later, after a severe cold, the swelling suddenly reappeared and was accompanied by extreme pain. Pressure produced purulent discharge into the throat and nose. There was some dislocation of the right eye. Incision was therefore made down to the upper edge of the orbit, the frontal sinus opened with a chisel, and the bone was found to be very thin and soft. The sinus was found to be filled with thick homogenous pus. The opening was then enlarged, the sinus washed and curetted, the ethmoidal sinuses thoroughly cleared out, a drain inserted, and the wound closed. It healed uneventfully and produced almost imperceptible deformity.

Digests.

ABNORMAL ERUPTION. By Dencer Whittles, B.D.S., L.D.S., Eng. The patient, A. B., a girl aged 10, was sent to me at the General Hospital for treatment. The earlier history of the case is as follows: When six years old acute periodontitis set in in the region of the right lower incisors and cuspid of the temporary teeth. The chin was constantly poulticed on the recommendation of a general practitioner, with the usual result that a troublesome sinus was made, whereupon he advised that the child should be taken to the Dental Hospital, where five temporary teeth were



Length from tip to apex, $\frac{7}{10}$ inch; greatest width, $\frac{3}{10}$ inch.

Looking at tooth from above downwards.

extracted. Six months later a sequestrum came away through the external sinus, which now healed, leaving a depressed scar through which the inferior cuspid has erupted. Before deciding to extract I thought it advisable that a radiograph should be taken in case the root should be a hooked one. It proved to be a straight one, and consequently there was no difficulty in the operation. The accompanying sketches of the tooth will explain what probably happened. These are made as the tooth appeared on the chin, but their respective mesial and distal sides are drawn as they would be placed had the tooth erupted in the buccal cavity. I was informed that the patient gave the chin tooth a bump on one occasion, which caused the first bicuspid to rise, but it righted itself again. The tooth sac evidently turned a somersault forwards, as the lingual aspect was forwards, so that the dentinal papilla was to an extent strangulated,

hence the loss of $\frac{3}{20}$ in. continuity of the root with the crown on the actual labial surface. This evidently happened just after the crown was completed. The wound healed rapidly and skinned over in five days.—*Jour. Brit. D. Assn., Dec., 1901.*

* * *

HYPERTROPHY OF THE GUMS—CONTINUED. Including Surgical Treatment of Case No. 2, reported in DENTAL DIGEST, June, 1901, p. 426. By W. J. Roe, M.D., D.D.S., Philadelphia. Read before Pennsylvania State Dental Society, July 9, 1901. *Operation July 25, 1900.*—The gums were carefully sprayed with hydrogen dioxid at intervals of two hours during the two preceding days. Ether was administered. Beginning on the right half of the mandible and at the ramus I made an incision through the mucous membrane and periosteum, extending on the labial surface to the median line, and upon the lingual surface to the cuspid tooth, and a little distance from the hypertrophied gum. With a periosteal elevator the gums were readily detached from the alveolar process, taking with it the two roots of the first molar, which were firmly held in the hypertrophied gum-tissue, leaving their sockets perfectly clean. The bone was firm, showing no evidence of involvement. The gums of the right maxilla were then removed in a similar manner, the labial incision ending in the median line and the palatal at the cuspid tooth. The second molar, which was carious, and second bicuspid, which was loose and carried downward, did not come away with the gum-tissue, but I afterward extracted them, as the alveolar process had been greatly absorbed, leaving not more than one-third of their roots covered. The same procedure was carried out upon the gums of the left superior maxilla and left half of the mandible, except that no teeth were removed. There was considerable hemorrhage, which was readily controlled by pressure with gauze sponges, and the denuded bone was dry at the termination of the operation.

About one hour later severe reactionary hemorrhage began, and the resident physician made local applications of the following agents in the order given, with but little success: hot water, solutions of alum, suprarenal extract, and Monsel's, after which he made continuous pressure by means of gauze sponges and his fingers for a considerable time, which controlled and stopped the hemorrhage. Constitutional evidence of the loss of blood was manifest in pallor,

sweating, and compressible pulse, which increased to 140. On July 28 the patient was discharged from the hospital, not having had any pain since the operation, the wound surface being in excellent condition and covered with healthy granulation.

Examination of Tissue Removed at the Operation.—The first portion of the hypertrophied gum removed was immediately incised, and spreads were made from the freshly cut surfaces; inoculations were made from these surfaces upon agar-agar and bouillon, also pieces of the tissue were macerated in bouillon. The cover-glass spreads were stained by Weigert's method. Microscopical examination revealed numerous yeast-cells. The cultures failed to reveal the growth of the yeast fungus, but showed various bacteria commonly found in the oral cavity. Pieces of the tissue from the various portions were fixed and sections were prepared as described in previous report.

Histological Examination.—One surface is covered with a layer of squamous epithelial cells, which were apparently normal. The opposite surface is composed of a dense layer of fibrous connective tissue, which apparently is the periosteum. The structure between the epithelial layer and the periosteum is composed of fibrous connective tissue and comprises at least four-fifths of the entire section. This layer corresponds to the second layer described in the previous report, but cannot be divided into two parts as was that layer, since the fibrous tissue is uniform in density throughout and contains fewer cells than the second layer in the previous report. This specimen differs from the one previously examined as follows: There is a marked increase in the quantity and density of the fibrous tissue, and a great diminution of the number of cells, which is probably due to a transformation of the various cells in the first specimen into fibrous tissue.

Results of Operation, and Condition of Patient to Date.—For the following five months I saw the patient once each week. The reformation of the gums in the molar and bicuspid regions was apparently perfectly normal, but in the region of the anterior six teeth, especially the upper, it appeared abnormally thick and slightly lobular. On Dec. 20 I removed for histological examination a piece of this gum-tissue, and Dr. Funk reported that the specimen showed practically the same histological condition as did the first specimen examined, excepting in one important particular,

i. e., the absence of yeast-cells. Since then until the present time I have observed the patient at intervals of two weeks, and the apparent thickening of the gums, instead of increasing, has slightly decreased. The absence of the yeast-cells and the cessation and slight diminution of growth argue strongly against this being a recurrence, and until positive evidence is adduced I shall not consider it as such nor institute further treatment.—*Cosmos, Oct., 1901.*

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DISINFECTION OF DENTAL INSTRUMENTS BY MEANS OF SPIRIT OF SOAP. By W. D. Miller, D.D.S., M.D., Berlin, Germany. Some ten years ago I reported upon experiments made with a number of antiseptics then in use as to their adaptability for sterilizing dental and surgical instruments. In these experiments I adopted the following method: Small cylinder-shaped pieces of glass, about 5 mm. in diameter and 4 to 8 mm. long, were put into a glass vessel containing some freshly extracted carious teeth, and a few drops of water added. They were stirred about with a glass rod until coated with infectious material, and then dried for twenty-four hours at room temperature or for two to three hours at blood temperature. A number of these objects were now laid in a sterilized glass vessel, the liquid whose antiseptic action was to be tested poured over them, and covered with a somewhat larger glass vessel, to prevent the possibility of infection from air germs during the experiment. At certain intervals one piece after another was taken out with sterilized pliers, rinsed with sterilized water and dropped into a tube of bouillon and kept in the incubator at 35 to 39 degrees C.

I purposely subjected the antiseptics to a severer test than they are likely to be put to in common practice, as I am of the opinion that our agents and methods should be sufficient not only to sterilize those instruments which have been previously thoroughly cleaned mechanically, but also instruments in which this precaution has not been taken, seeing that many operators are somewhat lax in the matter of asepsis, or occasionally even of ordinary cleanliness.

As a result of my investigations at that time I came to the conclusion that the five per cent solution of lysol was the most effective material we possess for sterilizing the hands and instruments chemically. Since that time various other remedies have been recommended for the purpose, among them formalin and spirit of soap.

The former has not been universally adopted, principally on account of its disagreeable, pungent smell and irritating effect upon the mucous membranes.

Spirit of soap, however, has been recommended by various authors since Mikulicz reported favorably upon it in 1899. As lysol has an odor which to some is unpleasant, and which is easily communicated to the atmosphere of the whole room unless particular precautions are taken, I was much pleased at the prospect of getting an antiseptic possessing all the advantages of lysol without its disagreeable odor. In order, however, to assure myself that spirit of soap is as reliable as lysol, I carried out a series of parallel tests between these two materials by the method given above. Of these tests (fifteen in all), eleven resulted in favor of lysol, one in favor of spirit of soap, and three were inconclusive. From these results I was forced to the conclusion that spirit of soap is not equally reliable with lysol, so that, while I now use it for disinfecting the hands, I still adhere to the five per cent solution of lysol for the sterilization of instruments.

As repeatedly stated in former publications, I always have two complete sets of instruments in use, and while I work with the one the other lies in the lysol solution for at least half an hour. Burs remain in it from one to four hours, although after mechanical cleansing one-half hour might be considered sufficient. I use for the purpose a plain glass vessel filled about three inches deep with the solution. Double-ended instruments I never employ, as it is impossible to sterilize them without putting the whole instrument into the solution. Nor do I use any cone-socket instruments, as infectious matter easily accumulates at the joint where the point is screwed into the handle, which necessitates the screwing off and mechanical cleaning of the point as well as the handle every time the instrument is used.

For similar reasons dental instruments should be perfectly smooth and polished, and the handles, so far as they come into contact with the mucous membrane of the mouth, should not be ornamented in any way. Particular attention must be paid to the scalers, as lesions of the gums are scarcely avoidable in using them. Consequently, in addition to the lysol treatment, as an extra precaution, just before using them I dip them into oil of cloves or concentrated carbolic acid and draw them through the alcohol flame, so

that the liquid catches fire and burns off. With smaller points one must see that not more than a minute quantity of the liquid adheres to the instrument, otherwise the temper of the latter is sure to suffer; with larger points the danger is not so great. In the same way I sterilize spoon-shaped excavators, used for clearing out cavities deep under the gums, where the soft tissues are sure to be wounded.

In all cases where infectious diseases of the mouth are present, patricularly where any symptom indicates the possibility of syphilis, the instrument must be sterilized with boiling water, about two per cent of soda being added to prevent rusting. The chief objection to the general use of boiling water for sterilizing instruments lies in the fact that, notwithstanding the use of the soda, it is very difficult to keep them bright and polished.—*Cosmos, Nov., 1901.*

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BLEACHING AGENTS. By N. S. Hoff, D.D.S., Ann Arbor, Mich. Read before Tri-State Dental Meeting, Indianapolis. That a comparative study of the bleaching powers of various well-known bleaching agents on organic stains might be made, a number of old extracted teeth were selected and cleansed of all carious substances, the apical ends cut off and the pulp tissue thoroughly removed. They were then thoroughly cleansed mechanically and chemically by chlorinated soda. After washing and drying they were soaked for three days in the following solution to stain: Eucalyptol full strength solution; old and dark oil of cloves; old oil of cassia; Black's 1, 2, 3 mixture and aristol; iodized phenol; 95 per cent solution of carbolic acid; old creosote; solution of iodoform in ether; alcoholic solution of beta naphthol; a glycerin solution of tannic acid. They were then removed from the solutions and slowly dried until entirely free from excess of moisture. The result showed staining varying from old gold to almost a purple.

One tooth of each stain was then cut across the root into thin sections, leaving the crowns almost intact. A complete set of the sections was retained as a proof set or sample of each stain, and the remainder was subjected to the staining powers of the following bleaching agents: Twenty-five per cent peroxid of hydrogen; three per cent peroxid of hydrogen; saturated solution of sodium dioxid; saturated solution of benzozon; aluminum chlorid; chlorinated lime; Kirk's sulphurous acid method. These reagents and

the methods of using them are well known except benzozon, which is a new organic peroxid and is used as a disinfectant, being considered of higher value than mercuric chlorid.

The bleaching agents used were divided into two classes—oxidizers and reducers—because of their chemical reactions. The oxidizers include all the peroxids and the reducers the chemical reagents.

The bleaching of the ten stains by the seven bleaching agents was done under as nearly similar conditions as could be made. Each set of sections was treated to the respective reagents for twenty-four hours at room temperature about 60 deg. F., and then the temperature was raised to 150 deg. and kept there for one hour. The sections were then removed from the bleaching solutions and washed thoroughly in several changes of distilled water. They were then dried in the sunshine for several days and tabulated in proper order on a card for study.

It was found that the twenty-five per cent peroxid of hydrogen was most effective in the majority of stains, bleaching all except the iodized phenol and the creosote. The sodium dioxid produced almost as profound bleaching as the peroxid, the iodized phenol stain yielding to this bleacher. None of the sections was as clear as those bleached by the peroxid of hydrogen. Benzozon stood third in effectiveness. This agent is not readily soluble in water and does not act promptly, but is more continuous as a supersaturated solution is used. This agent has much of promise, due to the fact that it is made of organic acids which will not disintegrate the hard tooth tissues, and plenty of time may safely be given for it to act. The three per cent peroxid did not decolor the stains sufficiently to make it of any special value. The aluminum chlorid was only slightly better than the three per cent peroxid of hydrogen. It seems to have acted very favorably on the iodoform and the tannic acid stains. The chlorinated lime had about the same value as the aluminum chlorid. It seemed slightly more effective in bleaching the eucalyptol and iodoform stains. Kirk's sodium sulphite and boric acid mixture was the least effective. It had no effect upon the oils, creosote or naphtha stains.

This study indicates that the bleaching of organic stains cannot be as effectively done by chemical reagents on the substitution theory as by the directly oxidizing agents. Whether this is due to nascent

oxygen set free or to oxygen in a molecular form it is difficult to determine. Practically, these conclusions indicate that effective bleaching of organic stains from medicines at least can best be done by those agents which will liberate most readily free oxygen.

* * *

ORAL PROPHYLAXIS. By D. D. Smith, D.D.S., Philadelphia. Read before the New York Institute of Stomatology, June 4, 1901. To arrive at any adequate conception of the value of the pulp in adult life there must first be a better and clearer understanding of what constitutes *tooth-life*. And in order to have this the ordinary complex division of the tooth should be abandoned, and the tooth resolved into its natural and distinct parts, crown and root, with full recognition of its two separate and distinct sources of life and nutrition. There must also be recognition of the fact that the *root* of the tooth and not its crown is the real, vital, living anatomy. A genuine living, functional tooth can be maintained without any portion of its natural crown; but a crown, no matter how perfect it may be, is entirely valueless unless supported on a living root. It must be recognized that the pulp-life which goes alone to the crown in its entirety—to its dentin and enamel and to the dentin of the root—is entirely separate and distinct from the life of the cemental tissue of the root; and that this cemental life is supplied wholly by the pericementum and its adjuvants. The crowns of teeth may be slightly affected or largely destroyed by decay, or even entirely obliterated, without appreciable interference with the integrity, utility, or even the esthetics of the real tooth. The fact that a tooth with a living pulp and an unimpeachable crown may and often does become entirely valueless through disease in cemental and pericemental tissue fails of recognition. What shall become of a pulp, either through disease or interference, is a matter of trifling import so long as the cemental and pericemental life remains intact, *but destroy the pericemental life and you destroy the tooth.*

Again, to form a just estimate of the value of the pulp in adult life, there must be an appreciation of the influence of misdirected pulp-activity in converting the cementum of the root into denser structure, as frequently results in adult life. Cementum, that all-important tissue of the root, is thickest and most abundant and vascular in young life; and because of this the integrity of the tooth is best maintained at that period. Teeth with *dense* cemental tissue,

sparsely distributed over the roots, are found in adult life only; and this denser cemental tissue is always, we believe, on teeth with living pulps; whilst abundant and properly distributed cemental tissue, so necessary to the conservation of the tooth, is found on young teeth generally, and on teeth and roots with devitalized pulps.

Pyorrhea rarely or never begins in *young* adults; neither is it found in connection with devitalized teeth where the devitalization occurred in young life. These conditions existing, it necessarily follows that whilst through destruction of the pulp there may be inconsequent injury or damage to the crown, there is yet no interference with cemental and pericemental life and consequently no injury to the real, living, and most important part of the tooth. These phenomena and deductions, as addenda to the discussions on "the value of the pulp in adult life," are not speculative merely, but they bear important relations to one phase in particular of oral prophylaxis.

It is not my purpose to attempt to answer the question, What is tooth-decay? but we may properly consider one near of kin, but more practical, more closely identified with our interests, and altogether more important—How do teeth decay? In previous writings the author has persistently maintained that tooth-decay always has its origin from the external surface of the tooth; if in the crown of the tooth, it begins in the enamel; if the parts are devoid of enamel, it begins at the surface of the dentin. Resolving the enamel until contact with dentin is gained, it expands and proceeds along the lines of the tubules in the direction of the pulp. The progress of this process of chemical tooth-solution, which we call decay, is hindered and opposed by two conditions only, namely, the constituency and consolidation of the dentin and the vital energy, a force often scarcely appreciable, interposed through the existence of the living pulp. It would seem that if any feature of tooth-decay is reasonably well defined, *this* is that feature; and yet I notice that this society has recently discussed this very proposition; and that not seemingly with any hesitancy or doubt, but with the full assurance of a settled finality.

Were we required to enunciate the fundamental principle governing treatment in a case of surgery, we would unhesitatingly say, first look for the cause, then endeavor for its elimination. This principle is as good and as applicable in dentistry as in surgery. And

in reviewing this matter we assume with confidence that the *beginnings* of decay are at the surface of the tooth, and that the agent or cause of it, whatever we may decide it to be, must reside in the menstruum in which the tooth is perpetually enveloped. How, then, shall we interpose a sure, safe, and effectual preventive? Prior to the publication of the paper "Prophylaxis in Dentistry" in 1898, there were a few feeble sporadic suggestions wholly in the direction of germicidal washes, but practical, beneficial results were entirely wanting. How could there be beneficial results from the occasional use of a doubtful germicide when the one and only remedy is the entire, positive, and frequent removal from tooth-surface of all matter inimical to tooth-life as well as to its composition?

Let us make a simple indisputable test. A devitalized tooth, sometimes but improperly called a "dead tooth," is generally conceded to be subject to more rapid decay in the mouth than a similar tooth with a living pulp. Let a pulpless, decayed tooth be removed from a mouth where the environments are such that resolution is rapidly taking place, and let it be placed in water, alcohol or glycerin, or simply exposed in the air, and we know that decay is immediately arrested and that further disintegration results only with the lapse of years.

It is wholly unnecessary to institute a process of artificial decay to prove the fact that when a tooth, good or bad, hard or soft, is removed from its environments—from the menstruum of the mouth —decay is at once arrested. The discovery and enunciation of the important fact that enforced and systematic change in the environment of the teeth in the mouth will prevent decay and carry with it many other beneficial results is new—new in essence, new in conception, and new in its elaboration—and results wholly from clinical investigation and experimentation.

Treatment of the teeth for complete change of environment, briefly stated, consists in thorough removal at frequent and regular intervals—once a month has thus far proved most satisfactory—of all accumulations, whether solids, inspissated excretions, semi-solids, or bacterial formations, from all the exposed surfaces of the teeth, leaving the enamel, or whatever of the tooth may be exposed, thoroughly polished and thus in the best condition to void hurtful deposits and equally to favor all efforts of the patient in the direction of cleanliness.

It is readily demonstrable that to secure and maintain true cleanliness in the mouth, even on the part of the most painstaking, is impracticable if not impossible without the direction and assistance of an expert and intelligent operator. There are calcific deposits constantly increasing; the more immediately hurtful acidulated bacterial accumulations; inspissated mucus retaining decomposing particles of food and furnishing most favorable conditions for bacterial culture and the retention of excretions, not alone from the gum margin, but from the whole gum surface. Besides these there are irregularities; formations and positions inaccessible to all ordinary methods of cleansing, which implies the perpetual retention of matter inimical to the teeth and gums. These injurious accumulations with their equally injurious emanations, hitherto overlooked and disregarded by physician or dentist, are not only causes of decay, but are equally causes of absorption of alveolar structure and recession of gums. These latter conditions are far more to be dreaded than simple decay.

Recognition will yet be made of the important fact that to the presence of foreign matter on and about the teeth, rather than to the quantity of it, the beginnings of decay and pyorrhea are wholly attributable; and the deleterious influence of a breath perpetually loaded with offensive emanations from this source, especially during seasons of salivary inactivity, as in sleep, we believe will ere long be disclosed as an important factor in many pulmonary and digestive disorders, and will be taken account of in medical diagnosis and treatment.

An interesting series of experiments to determine the precise conditions under which disease germs are carried by droplets of saliva when a person speaks or coughs or sneezes is described by Hermann Königer. "The author has been able to assure himself that in an apartment where there was no appreciable current of air a person speaking, coughing or sneezing could scatter germs to a distance of more than seven meters (twenty-two feet). The dissemination in speaking is different in different individuals, and the germs scattered abroad through the air by means of these droplets remain in suspension for only a short period. These droplets are really microscopic balloons having in the centre a bubble of air. The dissemination of these droplets, with germ-originating capabilities and tendencies, is most marked during coughing and sneezing. The dissemination by

means of droplets is especially to be feared in case of small microorganisms, such as the germ of influenza, of plague and of pneumonia. The *bacillus prodigiosus* and the *bacillus mycoides* are not carried so far, and the danger of infection is consequently lessened. * * * The more pathogenic microbes the mouth contains the greater the danger. Washing the mouth has the effect of decreasing the number of diphtheritic bacilli susceptible of being detached. Placing the hand or a handkerchief before the mouth prevents the emission of droplets charged with tubercle bacilli. In cases of pneumonia it would be necessary to wear a mask in front of the mouth. During a surgical operation no one present should speak. Measures might of course be multiplied indefinitely as suggested by this important idea of the scattering of microbes by droplets of saliva."

In view of the fact, as herein set forth, of the imminent and ever-present danger of infection from the inhalation of bacilli-producing droplets of saliva from mouths almost universally infected, is it not time for dentists and medical men to awake to the importance of enforced and positive cleanliness for mouth and teeth? The prophylactic treatment advocated in this paper contemplates the absolute and positive removal of the unseen but real bacterial plaque present in some situations on every untreated set of teeth, as well as the removal at frequent intervals of gum exudation, heretofore unsuspected and untouched, and the frequent and perfect polishing by hand methods of all exposed tooth-surfaces. The establishment and maintenance of these conditions in the mouth has been found not only possible, but the feasibility of it has been fully demonstrated.

The process has been more commonly alluded to as cleaning teeth, but there is a wide distinction between the ordinary methods of "cleaning the teeth" and this system of prophylactic *treatment*. The difference is, first, in appliances and methods; second, in extent and thoroughness of the operation; third, in the persistence and frequency of the treatment; fourth, in the object sought and the results attained—the prevention both of decay and pyorrhea.

When necessary scalers should be used for the removal of solid deposits and such mucous concretions as may have been the means of softening or causing a partial decalcification of cervical enamel; and this should be perfectly attained. Following this the teeth should be *thoroughly polished on all exposed surfaces*—the labial,

buccal, palatal, lingual, mesial, distal, and, in cases of developing teeth, the occlusal as well. The hand-polishing with stick and pumice should reach to every exposed portion of the tooth, and be continued until the touch, which can be educated in this matter to distinguish better than the eye, gives evidence of thorough cleansing and polishing. The operation is best done with properly shaped orange-wood sticks charged with powdered pumice-stone. The prepared orange-wood is most conveniently handled and carried to positions desired by an efficient and properly shaped porte-polisher. We believe there is no such thing as "a positively clean tooth," unless it has been made so by some special artificial process of cleansing.

The grit of not too finely powdered pumice-stone has been found best adapted for removing viscid mucoid accumulations and for polishing enamel surfaces; and what is even more important, the friction of the stick and pumice as applied by hand—*for power-polishers should never be used*—seems to excite or stimulate the vital forces of the tooth to increased activity in the removal of waste and the deposit of new and better material. The effect has been likened to massage treatment for muscular tissue. The benefits resulting from this treatment are most marked and extend to all parts of the tooth. Whilst the deciduous and young permanent teeth are most responsive, all classes of teeth and teeth of all ages are peculiarly and positively benefitted, as is plainly shown in them after a few months of regular and careful treatment.

The benefits are not to the enamel or treated surfaces alone, but results are equally pronounced in pericementum, gums, the alveolar structure, and apparently in the dentin and cementum. There are striking exhibitions of change and improvement of color in the enamel, while it is apparently taking on from month to month a firmer texture and a more compact resisting structure. The change in color is from an opaque, old-ivory appearance to that of clear, translucent, polished enamel, the whole giving the appearance of increased density and general improvement, denoting decay-resisting structure; the apparent stimulation from the treatment rapidly changing the color of the tooth, diminishing its sensitiveness, both externally and internally, and greatly improving its quality; changes which have astonished the author as perhaps no other results from operations on the teeth or in the mouth have ever done.

But let it be clearly noted that our claim is that, whilst in this endeavor after change of environment the teeth are rendered immune, this result is by no means the only benefit, if, indeed, it is the most important. Unlooked-for outgrowths from this treatment in other directions have been both surprising and satisfactory; developments have been so rapid as to make it difficult to keep pace with them. Again and again I have been compelled to advance what I had considered to be the extreme boundary lines into new territory.

Starting with the discovery of the true method for the prevention of tooth-decay, it quickly extended into the domain of tooth-betterment. There is an evident stimulation of the life forces of the tooth in this treatment, both through the pulp and through the pericementum and its adjuvants. The pulp is stimulated to the work of taking up the old stagnant, color-giving matter, and to the laying down into a more perfect organization of new, health-giving elements. The unsightly yellow in the crown and the dark brown so frequently found in the cervical dentin of exposed roots are replaced by the clear, translucent matter, best comprehended under the term tooth-color. I have seen in several instances, as a result of this treatment, the irregular unsightly white spots on labial faces of front teeth, a condition indicative of interrupted nutrition between dentin and enamel, resume a normal life-like appearance; and in a greater number of cases the dark brown in root-exposed cervical dentin replaced by matter of normal color.

Influence on Gum Tissue—A constant and by no means inconsequent result of the treatment is a decided change of condition in appearance and in fact of the whole gum tissue. This change is more quickly noticeable than that in the teeth themselves. Relieved of the irritation due to the presence of the toxic matter at the cervix, the gums begin at once to lose the abnormal sensitiveness which often attaches to them, as well as the dark, congested appearance, indicative of the presence of an irritant, and to take on, especially over the alveolar process, a beautiful and permanent *striation*. Improvement in the festoons is equally noticeable, they assuming a more regular and pleasing appearance; there is change for the better in the whole aspect of the mouth.

Benefits to Alveolar Structure.—Of the better, more regular and harmonious alveolar development resulting from this treatment I do not care now to speak with great emphasis, and only from the clinical

standpoint. As the larger percentage of my patients who are under this treatment are in the period where the alveolar structure is endeavoring to make room for developing teeth (ranging from four to twenty years of age), the opportunity for observation on this point has been of a fairly satisfactory nature. In every case where the eruptive process has been specially noted, from the first to the third molar, there has been apparently an easier and a more natural eruption of the tooth, accompanied with less irritation to the surrounding parts; the expansion of the alveolar structure has been natural and proportionate to the room required for the erupting teeth. In several instances where from the crowded condition of the jaw development, especially of the cuspid teeth, seem to have been arrested, the relief afforded by this treatment—the frequent removal of obstructive matter on the teeth and from about the gums of the necks of the teeth by hand-polishing—has induced a resumption of the retarded eruptive process, and the teeth are now steadily and satisfactorily pressing their way into normal position. I am more and more convinced that the practice of early interference with protruding cuspids, through other means than endeavoring to induce alveolar expansion, is radically wrong and to be discouraged.

This treatment is greatly beneficial to the general health, removing as it does at regular intervals the excretions of gum and alveolar tissue, as well as the viscid mucoid accumulations gathered especially through the mischievous working of nocturnal mucus. It prevents the introduction of much solid toxic matter into the stomach and lungs; it greatly relieves the breath of offensive odors and of disease-giving bacterial culture, and maintains a condition of cleanliness for the mouth unattainable by other means. To the undisturbed presence of toxic matter on and about the teeth we charge the beginnings of all gingivitis and all pyorrhea; hence it should be the true preventive, as it is when properly directed, the one remedy for this dread disorder.—*International, Dec., 1901.*

* * *

ACTION OF ACIDS IN VARIOUS STRENGTHS ON TOOTH STRUCTURE. By Herbert Johnson, D.D.S., Macon Ga. Read before Georgia State Dental Society All the theories which have heretofore been advanced regarding caries of the teeth have not disproven the common-sense fact that acids are the direct agents involved in the disintegration and breaking down of tooth struc-

ture. It is not the object of this paper, however, to show how these acids are formed, whether their presence in the mouth is due to bacteria, fermentative processes, or a disordered condition of the digestive organs, but rather to try to prove which of them is the most destructive. Knowing this and knowing which of the three hard structures of the tooth are most readily attacked by the various acids, we may then set about adopting some plan by which the evil consequences of their presence in the mouth may be avoided. The acids being common remedies used extensively by dentists in treating pathological conditions of the oral cavity, and being also frequently prescribed by physicians for various disorders of the system, it seems proper that we should attempt to discover more of the nature of the destructiveness of these agents than mere imaginary or hearsay theory.

It is a common belief that tinct. of chlorid of iron is destructive to the teeth, and when the modern physician prescribes this medicine he immediately warns his patient to take it through a quill or glass tube. But do we *know* that it is a destructive agent, and if it is, which of the three hard tissues does it attack the most readily, enamel, cementum or dentin? We are told by dental surgeons to use sulphuric acid fifty per cent in treating pyorrheal troubles in the gums and alveoli and in opening up closed and inaccessible pulp canals in devitalized teeth. But have we ever had any practical tests made to prove to us whether sulphuric acid in such a strength or in *any* strength, is a safe remedy to use about the unprotected surfaces of teeth. The object of this paper is to turn attention to this line of thought, and with this object in view a number of experiments were made with the acids in common use, in various strengths, and the result of which you will now be asked to consider.

Experiments were conducted with the acids sulphuric, hydrochloric, nitric, acetic, trichloracetic, and pure lemon juice. These tests were made by immersing sections of teeth in various strength solutions of these acids for twelve hours. The teeth were prepared by being cut into sections, that enamel, cementum and dentin might be equally exposed to the action of the acid, and that the result might be more accurately determined. Five solutions of sulphuric acid were made—five, ten, twenty, thirty and fifty per cent. In the fifty per cent solution the enamel of the specimen was not attacked

to any great extent, but the cementum and dentin were badly disintegrated, especially that portion of the dentin surrounding the pulp chamber and canal. The effect of the thirty per cent solution was exactly the same, except that it was more active at every point. The twenty per cent solution had destroyed more enamel on its specimen than either of the others, but had attacked the cementum and dentin to a less degree. The five and ten per cent solutions had likewise attacked the enamel more and the cementum and dentin less than the stronger solutions, but were not so active as the twenty or thirty per cent solutions. From these tests it would seem to be proven that the thirty per cent solution of sulphuric acid was the most active of all these solutions and therefore the most dangerous. It also seems to be proven that the weaker solutions, five, ten and twenty per cent, were more active on enamel than any of the other tooth structures. These results could, however, have been slightly affected by a possible difference in the specimens. One may have been more vulnerable at one point than another, or of a different degree of density, and therefore have had more resisting power than another to the action of the acids. The hydrochloric acid was tested in four strengths of solution, five, ten, fifteen and twenty-five per cent. The twenty-five per cent solution had attacked and removed every vestige of enamel and every particle of lime had been extracted in a most wonderful manner from the other tissues, leaving the outer form of the tooth unchanged but very soft and flexible like leather. The fifteen per cent solution had acted exactly as the stronger, removing the enamel entire and extracting all the lime from the cementum and dentin. The ten per cent specimen was an old dense, yellow molar; but the acid, even in this weakened form, had removed all the enamel except a very small area, and the other parts of the tooth were rendered soft and flexible. The five per cent had destroyed every particle of enamel from the specimen, but had not succeeded in softening all of the cementum and dentin. Had it had more time there is hardly a doubt but that it would have done so. These tests seem to prove that hydrochloric acid is most active on enamel, but that its action is very energetic on all the tissues, destroying them completely, even in weak solutions. It also seems to prove that the stronger the acid solution the more destructive the action. The acetic acid tests were made in four solutions, five, ten, twenty-five and thirty-five per cent. The thirty-five per

cent had affected slightly all the tissues of the specimen, the enamel showing a slight softening on the outer surface and the dentin and cementum being only slightly affected. The twenty-five, ten and five per cent solutions showed a very similar action to the stronger acid, except less in proportion to the strength. These several tests of acetic acid therefore seem to prove that this is a comparatively harmless acid, which would prove destructive only after long and continuous contact with the tooth.

One test was made with trichloracetic acid twenty per cent. This specimen showed exactly the same action as the hydrochloric weaker solutions. It had commenced to remove the enamel very thoroughly, and the thinner parts of the specimens, where the action had proceeded from both sides, had been rendered soft and flexible.

One test was made with nitric acid, a twenty per cent solution. This specimen showed the same action on the cementum and dentin as the hydrochloric and trichloracetic acids, but the enamel had not been severely attacked and was left in a fairly good state of preservation. This seems to prove that twenty per cent nitric acid is most energetic on cementum and dentin.

Pure lemon juice was used in making one test. This specimen showed that its enamel had been attacked quite severely, especially at points where the enamel had been previously cut or broken, leaving the long axis of the rods exposed. The dentin had been disintegrated in the proximity of the pulp canal and chamber. This test seems to prove that lemon juice is a decidedly dangerous substance, being equally as destructive as twenty per cent sulphuric or five per cent hydrochloric acids. It also shows that it is most destructive where the enamel has been previously cut, as around the edges of a cavity or margin of a filling.—*Dental World, Dec. 1901.*

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TEETH OF PITHECANTHROPUS ERECTUS. By Dr. Oscar Amoêdo, Paris. In 1898 I gave in my treatise on "Dental Art and Legal Medicine" an anatomical description of the teeth of *Pithecanthropus erectus*—a description that differed notably from those made by the savants up to that time. I should not have returned to the subject if the discussion had not brought forth more recent papers of exceptional interest, of which the principal one is that of G. Schwalbe. The interest taken in the subject by Emperor Will-

iam II, and also by an American millionaire, Mr. Vanderbilt, is well known. As in the discussion raised by this subject the examination of the dental organs is of first importance, I again take up the matter and complete my first description. I consider it the duty of the dentist to take part in the discussion, and as the excavations have put us in possession of several dental specimens, to give the results of my investigations. Our profession has been so often accused of empiricism that we ought not to lose an occasion to show what the resources of our art can contribute to general knowledge in the relations of odontology with general science.

I will state briefly the history of the question. In 1891 Dr. Eug. Dubois, a Dutch military surgeon, found in Java, in the formation belonging to the upper Pliocene or to the most ancient Post-tertiary period, portions of a skeleton consisting of the top of the cranium, two molar teeth, and a femur. In his description of these pieces he attributed them to an animal intermediate between man and the large anthropoid apes, that is, in other words, the true ancestor of man, or the *Pithecanthropus erectus*. M. Manouvrier said that it so happened that the three pieces found were exactly those from which we could draw the best conclusions as to the form and size of the encephalus, the attitude of the body, and the importance of the maxillaries in their relation to the cranium.

Laying aside everything that does not concern the dentist directly, we will occupy ourselves with the molar tooth found near the cranium. It is an upper third molar, according to M. Manouvrier, of which the grinding surface alone has the aspect of a human tooth. Its volume, the direction antero-posterior of the crown, and the extensive separation of the roots do not permit us to attribute it to man. On the other hand, it differs from the teeth of the gorilla and the chimpanzee. M. Manouvrier has searched the Broca Museum for a tooth of the same development. After having examined the crania of a hundred negroes of Africa and New Caledonia he found such a tooth in the skull of a New Caledonian, a Kanalian. It is a lower third molar, but we know that the lower third molars are generally larger than the uppers, the former sometimes attaining a giant size, the latter sometimes being of a stunted growth. As for the upper third molar, he could find none resembling the Java tooth. He considered it as belonging to an anthropoid or to an extinct human race. It was on comparing the large size of the tooth with

the small dimensions of the cranium that Dr. Dubois found himself, he believed, in position to say that he was in the presence of an ancestor of man, the most ancient known up to that time.

I will not enter into a debate with the savants regarding the skull. Some of them, as Cunningham and Turner in England—consider it a human skull; others—as Kräus, Virchow, Luschen and Waldeyer—believe it belongs to an anthropoid. M. Manouvrier, while proceeding with extreme caution, attributes the greatest importance to Dr. Dubois' discovery and is inclined to his opinion. He had an opportunity of seeing the pieces when Dr. Dubois was in Paris, and has contributed another communication. He was struck by the complete state of fossilization of the bones, a state comparable to that of the pieces of Trinil and Neanderthal. The skeletons of the most ancient of the Post-tertiary period—those of Spy, for instance—have preserved an aspect but little different from the neolithic ossifications.

The examination of another tooth found near the first, and of the existence of which M. Manouvrier did not know until later (an upper second molar according to him), and a comparison of it with the first tooth, has enabled him to dispose of the theory attributing it to an anthropoid. He concluded that he was in the presence of a race of the forerunners of man and one anterior to the race of Neanderthal and Spy.

I will call attention to a recent work presented to the Academy of Vaucluse by M. Gabriel Bourges. This author, having knowledge of the existence of but one tooth attributed to the Pithecanthropus, has perpetuated in his description the old errors committed by the anatomists who had examined it; and I believe I have been the first to call attention to the fact that the long diameter of the crown is transversal (bucco-lingual) and not antero-posterior (mesio-distal), as has been said. As most of the ethnological considerations are drawn from this abnormal direction of the tooth, it seems well to give my opinion upon the anatomical characters of these teeth. We have two upper teeth, a left first molar and a right third molar. The roots are of a dark red, almost black; the crowns white. The crowns are swollen, blistered, narrowing rapidly toward the neck, with the exception of the mesial face, which, by compression against the neighboring tooth, is markedly flattened. The grinding surface of the first molar is so worn away that it no

longer presents the fissures and tuberosities that existed there normally. The wear has left a surface a little concave, following the bucco-lingual diameter. The third molar, on the contrary, has not been worn away, except that a small tubercle on the mesial border shows some slight traces of wear. The roots are short and the palatal root of the first molar diverges a little. All the roots of the third molar, the palatal and the two buccal, which two are united, are strongly divergent.

First molar. This tooth has been considered by the anatomists who have described it as being the second molar. If we compare its anatomical characteristics with those of the first molar we find an absolute resemblance. In fact, its crown, looking at its grinding surface, has the form of an ovoid, and its greater mesio-distal axis is situated on the palatal or lingual side. With the second molar, on the contrary, the grinding surface has a diameter mesio-distal larger on the buccal side. Besides, the disto-lingual fissure, which has disappeared from the grinding surface, crosses the marginal lingual border and appears on the entire lingual surface of the crown and root, dividing the tooth into two lobes, mesial and distal. This is a characteristic never found in a second molar, its lingual surface being always round. As for the roots, the palatal is flattened in the linguo-buccal direction, as in all first molars, while in the second molars it is round. Of the buccal roots the mesial is longer and larger than the distal, and is grooved throughout its entire length, giving the appearance of two roots united, which is probably the case, as there seem to be two apical foramina. The distal root is slightly rounded, and is united to the mesial. There is no doubt in my mind as to this tooth being an upper left first molar.

Third molar. Contrary to the descriptions that have been given of this tooth, we find that the longer diameter is linguo-buccal (transversal) and not mesio-distal (antero-posterior). In general its crown is larger than the ordinary type of upper third molars. Its form is about normal; it is flattened on the mesial (anterior) face by the pressure exerted by the second molar, this face terminating at the buccal and lingual extremities in sharp angles, being rounded at the three other faces, so that they conform with each other. This is a characteristic of all third molars, however, owing to their position at the extremity of the dental arch, having no tooth to compress the posterior surface. Its palatal root is short, relatively

diverging, and is flattened in the bucco-lingual sense. On comparing it with the first molar it is rounded. Its two buccal roots, also diverging, are united, the mesial (anterior) presenting an analogy with the same root of other tooth, that is, it is grooved as is that tooth in its entire length. The distal root is longer.—*Cosmos, Dec., 1901.*

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INFLUENCE OF METALS IN THE DEVELOPMENT OF MICROORGANISMS IN GELATIN. By Dr. Fritz Schenk, Vienna, *Oest-Ungar. Vier. f. Zahn.*, Jan., 1901. Reviewed for *International* by Dr. W. H. Potter. The author gives Miller the credit for making the first experiments along this line, and for showing that certain metals had the power of hindering the development of bacteria. His experiments were especially concerned with those metals commonly used as filling materials. Behring later confirmed Miller's experiments and extended the knowledge as to the controlling action of gold and other metals upon the growth of various bacteria. Behring held that there was a solution of the metal in the gelatin brought about by the by-products of the growing bacteria, and that only on this supposition could the controlling action of the metals upon the growth of bacteria be explained.

The author starts with the results obtained by Miller and Behring and undertakes a further development of the subject. His method was to place a piece of metal in a culture medium which had been infected with bacteria, and then to note whether the metal hindered or not the growth of bacteria. In this way were tested gold, silver, zinc, tin, lead and iron. Of these metals lead and tin showed no restraining influence over the growth of bacteria. With iron the effect was very slight. Gold, silver and zinc, on the other hand, showed a marked influence The influence of zinc was most marked. Further investigations were made to establish the duration of this action. It was found that at the expiration of twenty-four hours gold still exercised a controlling influence upon an infected gelatin, and that silver held a still greater influence than gold. Lead and tin exercised no influence at all. Iron showed only a very slight influence, while zinc showed the most lasting influence of any of the metals used. The conclusion which the author draws from the last experiments is, that none of the metals exercises a lasting effect upon the growth of bacteria.

After establishing the above results by repeated experiments, a

further series was undertaken to determine whether the liquefaction of gelatin by heat was at all influenced by the presence of metals. For this purpose culture gelatin was heated in a water-bath and found to become fluid at 24 to 25 deg. Celsius. But where the metal zinc was present under similar conditions the gelatin did not become fluid until 32 deg. Celsius had been reached. The author feels that he has established the fact that such metals as hinder the growth of bacteria in gelatin also compel a higher temperature for its liquefaction. In reaching this conclusion experiments were made with zinc, silver, gold, platinum, iron, lead.

The theory that a solution of a part of the metal occurs in the culture gelatin is favored by the author. And in this way a reason is given for the controlling influence which various metals have upon the growth of bacteria, and also for the ability which many possess of requiring a higher temperature for the liquefaction of culture gelatin. If one seeks to gain some practical points from these very interesting observations upon the influence of metals upon the growth of bacteria in culture gelatin he will be somewhat disappointed. For while several of the metals—notably zinc, silver and gold—exercise a decided influence upon bacteria, this influence is only of short duration, and could hardly be considered of much value if relied upon in the case of a filling-material.

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RESTORATION OF THE NORMAL OUTLINE OF GUM-TISSUE BY MECHANICAL MEANS. By W. A. Mills, D.D.S., Baltimore. Read before the Association of Dental Surgeons, Baltimore, Oct. 16, 1901. In this paper attention will be called to the use of quick-setting amalgam and paraffin, either alone or in combination, for replacing the lost parts of roots where they have been fractured to a considerable extent along the lines of their shafts, also for preserving the normal outline and fullness of the gum-tissues covering the labial surfaces of the six superior anterior teeth. In the majority of cases the break extends from the cervix to near the apex, often carrying with it more or less of the thin bony covering. If allowed to remain for only a short while before surgical interference the soft tissues become inflamed, causing more or less absorption of the alveolus along its whole length. To splint such roots is useless; consequently they have been extracted, producing a contraction of the bony tissue and a corresponding depression of

the gum-tissue; and when substitutes have been inserted to replace the lost organs their artificial character has been so pronounced that the beauty of an otherwise pretty or handsome face has been disfigured. To overcome this, and to preserve the beauty and natural outline of the tissues, so essential to life-like prosthetic work, the following is respectfully submitted for consideration: Before removal of the loosened part at the root to be treated, separate it from the soft tissues, being careful not to injure or tear them, for more depends upon this for success than anything else. After removal of the fractured part, clean it and sterilize the fixed portion of the root, seal the apex with pink gutta-percha, make undercuts along both sides of the pulp-canal, insert screw post in the solid portion towards the apex, and fill with a quick-setting amalgam. Allow sufficient material to make up for the lost parts of the filling out of the gum contour. In very simple cases amalgam alone will do, but when the fracture is deep seated and the alveolus is expanded, first fill against the bony structures with paraffin and the remainder finish with amalgam. The amalgam will protect the paraffin; for while the latter is non-absorbable, and perfectly congenial to all vitalized tissues, it is slightly compressible at blood temperature and might be forced out of shape by mastication or the pressure of a plate if it were not so protected. Before dismissing the patient be sure that the amalgam in contact with the soft tissues is as smooth as possible, with no overhanging edges. At the second appointment the surface of the amalgam must be highly polished with a thin orange-wood stick and fine pumice-stone. In the course of a few months you will be pleasantly surprised to notice how closely the gum-tissues have adapted themselves to the surface of the amalgam, and how very healthy they are, notwithstanding foreign bodies lie embedded within their folds.—*Brief, Dec., 1901.*

BURNS TREATED WITH PURE CARBOLIC ACID.—Dr. J. L. Muench, in the *Medical News*, thus gives the rationale of the treatment of burns with pure carbolic acid: "Externally carbolic acid acts as an escharotic when applied in the pure state, combining with the tissues and destroying them. Strange to say, however, its action on a burned surface as an escharotic is neutralized by the albuminous effusion becoming coagulated, and local anesthesia of the peripheral nerves takes place. The general result on burns treated with carbolic acid is that there is complete exclusion of air and coagulation of the serous effusions, and the healing process takes place with much less suffering and in a shorter time than by any other method."

DECISION IN FAVOR OF WISCONSIN STATE BOARD OF DENTAL EXAMINERS.

No. 158.

STATE OF WISCONSIN. IN SUPREME COURT.

STATE OF WISCONSIN, ex. rel., W. L. COFFEY,
Respondent,
vs.
C. C. CHITTENDEN, et al., constituting the State Board of Dental Examiners,
Appellants.

APPEAL FROM THE CIRCUIT COURT FOR MILWAUKEE COUNTY.

Action for a peremptory writ of mandamus to compel the State Board of Dental Examiners to license the relator to practice dentistry in the state of Wisconsin. The petition in the main is as follows, omitting formal parts: May 11, 1901, the relator was duly awarded a diploma by the Department of Dental Surgery of the Wisconsin College of Physicians and Surgeons, of Milwaukee, Wisconsin. He had taken three full courses of lectures of seven months each, the last two being at such college. It was a duly incorporated institution under the laws of this state, authorized to grant such diplomas, and was a reputable institution of its kind. May 21, 1901, the petitioner, upon his said diploma, applied to the State Board of Dental Examiners for a license to practice dentistry in the state of Wisconsin, tendering a fee of one dollar to the board, and making proof of the corporate organization of said college. May 23, 1901, said board refused to grant the petitioner's application without examination. The members of the board are prejudiced against the petitioner and the institution which graduated him, and have unreasonably and maliciously determined that the graduates therefrom shall be examined by such board before being licensed to practice dentistry, upon the ground that such institution is not reputable, and have acted upon petitioner's application pursuant to such determination.

The board made return to the alternative writ, denying all the allegations of wrongful conduct recited therein, and alleging that its refusal to license the petitioner without an examination was solely because, after a fair and impartial investigation of the college which graduated him, the conclusion was reached that it was not a reputable institution.

The issue thus formed was brought to trial before the court June 20, 1901. Proof was then adduced of what the board acted upon in reaching the aforesaid conclusion, as follows: In April, 1900, the college in question, desiring to join the National Association of Dental Faculties, applied to the state board of dental examiners for its approval thereof, that being a prerequisite thereto. Its rules as to eligibility to membership therein have been substantially adopted by the board, as to what constitutes a reputable dental college. Such rules require, among other things, that no college shall receive a student from another college, giving him an advanced grade, except upon the evi-

dentiary certificate of his work at the latter being verified by its dean, and upon the same conditions that would have been imposed by it, the facts in that regard to be ascertained by conferring with such institution. As a basis for action upon said application, the board visited said institution and subjected it to the test of said rules, in the course of which questions were asked of the persons in charge thereof, their answers being taken down by a stenographer. Among such answers were in substance the following: The number of students at the institution is 33. The faculty is without a dean. Students are taken from other colleges without investigation as to their standing at such colleges. All members of the faculty are paid except two. Students have not been received for less than the legal fees stated in the catalogue. The institution advertises for customers to be practiced upon at the institution. An investigation of the truth of such answers resulted in a discovery that three members of the faculty were not paid salaries, and that the number of students was 21. The result was a conclusion not to approve of said application, which was communicated to the faculty of the applicant. From time to time after the occurrences stated the members of the board in an individual way made inquiries as to the character of the dental department of said college. Confirmatory of the information obtained as aforesaid, that students were received at the college from other institutions and given advanced standing without adequate knowledge to base such action upon, an instance was brought to the attention of the board where a student was admitted to the college who had failed in his examination at another college and left there dissatisfied on that account, and was given credit for full time spent at the institution from which he came, without examination. No formal investigation was made after the one mentioned. On the information then obtained, and that acquired subsequently by the individual members as stated, the decision was made in May, 1901, that the institution in question was not reputable.

The court, against objection, received evidence tending to explain some of the objectionable matters which the board discovered or concluded existed in April, 1900, and evidence showing that the board was mistaken in such conclusions as to other of such matters, and that those which in fact existed were removed prior to the graduation of the petitioner. The court delivered an opinion to the effect that the members of the board acted in the utmost good faith in deciding against the petitioner's application upon the ground that the college that graduated him was not reputable, but that it proceeded outside its discretionary authority in that it based its conclusion upon facts existing in April, 1900, without any investigation as to the actual condition of things in May, 1901; that had the facts upon which the board acted in April, 1900, existed in May, 1901, they would have justified the conclusion then reached; but that the conditions had changed so that at such later date the college was in fact reputable.

Findings of fact were accordingly filed, which are in substance as follows: When the Wisconsin College of Physicians and Surgeons graduated the petitioner, and when he applied for a license to practice his profession, it was a duly organized corporation under the laws of this state, entitled to issue

diplomas such as the one granted the petitioner, and was a reputable institution. The requisites for admission were, as a minimum, a certificate of entrance into the second grade of a high school or its equivalent, or a diploma from a reputable medical college, school of pharmacy or veterinary medicine. The requirements of dental students for graduation were, attendance upon three full courses of at least seven months each, the first two of which might be pursued in any reputable dental college having the same or equal standard of requirements, the faculty having the right, however, in any case to require an examination. A license was refused the petitioner wholly upon the ground that the college was not reputable. The decision was made without any immediate investigation of the institution, hence the conclusion reached was not the result of legal discretion. The board wrongfully refused to license the petitioner, to his damage in the sum of $2 and costs to be taxed. Upon such facts the court concluded as a matter of law that the petitioner was entitled to a peremptory writ of mandamus requiring the State Board of Dental Examiners to license the petitioner to practice dentistry in the state of Wisconsin, and judgment was entered accordingly.

Marshall J.—"It is elementary that in mandamus proceedings to coerce a judicial officer or any person or board in the exercise of judicial or quasi-judicial power, the sole legitimate purpose thereof is to set such person or board in motion; to command him or it to act, not how to act—to exercise the judicial power vested in him or it, not to control as to the conclusion to be reached. State &c. v. Kellogg, 95 Wis. 672; State &c. v. Johnson, 103 id. 591, 623; State &c. v, Teal, 72 Minn. 37; Merrill on Mandamus 40. Where there is no reasonable ground to justify a decision by such officer or board other than one way, and there is a failure to act accordingly, the function of a mandamus proceeding is broad enough to remedy the mischief by compelling the making of such decision, in perfect harmony with the rule that the office thereof is not to control discretionary authority, but to compel the exercise thereof. State &c. v. Johnson, supra. That is to say, if the law imposes the duty upon a judicial or quasi-judicial body to do a particular thing upon determining that certain facts exist, and reasonable inquiry be made by it in respect to such facts, and from the information thus obtained there is no reasonable ground for any conclusion other than that the conditions precedent to the performance of such duty exist, and a decision is made to the contrary or performance thereof is refused, such conduct is not the exercise of discretionory power, but a refusal to exercise it—a refusal or neglect to perform a plain duty imposed by law; and there being no adequate legal remedy, the way is open for the extraordinary jurisdiction of the court to award its writ of mandamus. It is plain that in such a situation the court does not deal with disputed facts. It acts upon the theory that the person or body in duty bound to find the facts in accordance with the evidence, in refusing to do so, goes beyond or refuses to exercise his or its jurisdiction, and is, on that ground alone, a subject for coercion by mandomus. State v. Johnson, supra."

Applying the foregoing stated principles to the record before us, it is manifest that the learned circuit court proceeded erroneously from the begin-

ning to the end of the trial we are called upon to view. Assuming, for the moment, that the State Board of Dental Examiners decided that the institution which graduated the relator was not reputable solely upon evidence of its character one year previous to the date of such decision, as the circuit judge seems to have supposed, and that such course was unreasonable, that it should have acquired information as to the character of the college at or about the time of the graduation of the relator, and that in neglecting to do so it failed to exercise a legal discretion—that did not give the court any warrant in this proceeding to do what the board ought to have done, and compel it to accept the court's conclusion on questions of fact upon evidence produced for the first time therein, questions which the board had exclusive jurisdiction to try and determine. In attempting to do so the court usurped the functions of the board most completely. It might as well have issued a license directly to the relator as to try the question de novo as to the reputability of the institution graduating him, and coerce the board into executing its judgment. Manifestly the court having come to the conclusion that the board decided properly as to the reputability of the Wisconsin college, except for the remoteness of the evidence upon which the decision was based, and that it failed to exercise a legal discretion because it did not determine the question presented for decision upon direct evidence of the character of the institution at or about the time it graduated the relator, the relief granted should have been limited to a judgment awarding a writ of mandamus compelling the board to proceed and determine the question at issue by a proper investigation. While what is the reasonable limit of such an inquiry is a judicial question, the inquiry itself cannot be taken from the board by the court otherwise than by a clear usurpation of power.

The next question for consideration is, Was the trial court right in holding, as a matter of law, that evidence establishing non-reputability of the institution in April, 1900, was not sufficient to warrant a decision that its character was the same at the time it graduated the relator. We know of no rule by which such holding can be justified. The learned court in his opinion did not attempt to ground the decision on principle or authority, and counsel for respondent must be acquitted of any such attempt in this court. Responsibility of an institution of learning obviously has to do with its actual character in that regard measured by those competent to judge thereof. It rests on conditions that do not ordinarily change in a day or a week or a month. It does not spring up or pass out of existence suddenly. It is one of those conditions which when once established is presumed to continue, not indefinitely, but so that lapse of time only weakens the force of the presumption as evidence, and may so weaken it that no one could reasonably be affected thereby. Many illustrations of the rule might be given, that where a situation is once established it is presumed to continue, in the absence of evidence to the contrary. The existence of particular relations between persons being established, a presumption of their continuance arises. (Appeal of Reading F. I. & T. Co. 113 Pa. St. 204.) A person once proven to have been a gambler is presumed to have continued such, in the absence of evidence of his reformation. (McMahon v. Harrison, 6 N. Y. 443.) Cover-

ture once sworn is presumed to continue. (Erskine v. Davis, 25 Ill. 251.) The same is true of bad character for truth and veracity (Sleeper v. Van Middlesworth, 4 Denio 431); and as to a particular mode of doing business (Lawson on Presuptive Ev.); and with malice of one person toward another (State v. Johnson, 11 red. 354). Opinions of individuals and mental states, once shown to exist, are presumed to continue (1 Greenl. Ev. 41). A person shown to be alive at one time is presumed to continue so for the period of seven years. These illustrations amply indicate the general scope of the principle under discussion. It is grounded on common knowledge that conditions of things and character of persons change gradually as a general rule, when they change at all. The exceptions only go to the weight of the presumption of continuity and class it with rebuttable presumptions, but it remains probative to some degree in some cases for a great length of time. No general rule can be stated as to when its force will become so weakened by time as to render it too remote to be considered at all, or to be given weight sufficient to prima facie establish the fact to which it points. There are exceptions to this as in case of the continuance of human life. In Greenl. Ev. 41, the general rule is stated thus: "When the existence of a person, a personal relation, or a state of things is once established by proof, the law presumes that the person, relation, or state of things continues to exist as before until the contrary is shown or until a different presumption is raised, from the nature of the subject in question." On the subject of character, lapse of time is not considered to so weaken the presumption of continuance as to render evidence thereof at a period of four years prior to the date of the inquiry irrelevant. (Sleeper v. Van Middlesworth, supra). In McMahon v. Harrison, evidence of character two years prior to the time of the act to be affected was held relevant."

Enough has been said to indicate pretty clearly that evidence of the character of the institution in question in April, 1900, was proper to be considered in determining its character in May, 1901, and that the trial court erred in holding to the contrary. Further, assuming that such evidence was the only proof before the board of the reputability of the college in 1901, and was sufficient to establish non-reputability in April, 1900, it did not transcend the bounds of reason for the board to decide that it was sufficient to establish the same condition in May, 1901, in the absence of any satisfactory evidence to the contrary. The trial court seems to have supposed that if the board acted on information acquired at the earlier date, it failed to find non-reputability in May, 1901. "The reputability of a dental college which the board is obliged to consider must depend upon the facts that exist at the time of such consideration," said the learned trial judge; and further, "They can neither be facts that have existed in the past nor those that may possibly exist in the future, but they must be present facts upon which the board may exercise its judgment." We cannot approve of that doctrine. Of course, the question of fact which the board was required to solve was whether the institution was reputable when it graduated the relator. But facts and circumstances evidentiary of non-reputability, proven to have existed a considerable length prior thereto, were relevant, and might be sufficient, unex-

plained, to establish the ultimate fact involved, if such were the judgment of the board acting within the bounds of reason. The trial court seems to have confused mere evidentiary with the facts, for it is elementary, as we have seen, that in solving a controversy such as the one the board had to deal with, while the situation at a particular time in the final point to be reached, facts establishing the situation within any reasonable period prior thereto by reasonable inference extends to such point, indicating where the truth lies. That method of establishing controverted facts is so general that we may safely venture to say it cannot be found condemned by any reputable authority.

We have been unable to discover how the trial court came to the conclusion that the decision of the board was based wholly on evidence of the character of the school in April, 1900. The record does not read that way. There was testimony that the board in January, 1901, made an investigation of the standing of students that graduated with the relator, which resulted in obtaining what was supposed to be reliable information that four or five of his class failed in from four to six studies in their first year's work, which was taken at the Milwaukee Medical College; that they were received into the Wisconsin College and given credit for full time spent at the former institution; that the relator was one of the persons so received; that when he was received he was deficient in several branches; that he did not thereafter pursue them in any regular way; that the result of such investigation was persuasive with the board that the condition which they found in April, 1900, existed in 1901. There was further evidence to the effect that from time to time the members of the board, in an individual way, gathered information as to the institution, and further, that though the decision as to the reputability thereof in 1900 was well known to its faculty, no application was made thereafter for a reinvestigation, and that no proof was offered by the relator or by his associate graduates, when the board was requested to license them, to remove its impression that the school was not reputable. We have not stated all the evidence, but have stated enough to show clearly that the trial court grievously erred in holding that the board acted solely on information it obtained in April, 1900.

The learned counsel for respondent, as it seems, insists that the judgment appealed from is right and should stand regardless of whether the reasons therefor, given by the trial court, are tenable, and regardless of whether the board rightly decided that the school was not reputable in April, 1900. In that, as we take it, counsel concede, what the trial court did not, that proof of the condition of things in April, 1900, tended to establish the condition existing in May, 1901, but contend that it was unreasonable to hold at the earlier date, from the facts then before the board, that the school was not reputable. In that, as it seems, the same mistake is made that was made by the trial court, i. e., the assumption that the board in 1901 acted solely on the information obtained in 1900. But, waiving that a moment, we will consider the proposition submitted by counsel. It must be conceded that the law under which the board acted required them to determine, as a question of fact, whether the relator was graduated by a reputable dental college.

It is made their duty to license, without examination, any regular graduate of an incorporated, reputable dental college which requires that candidates for graduation shall attend two full courses of lectures of five months each, the last of which courses shall be attended in the college which issued the diploma. The law does not attempt to define reputability, but uses the term in its ordinary sense and in such a way as to indicate that an institution may satisfy all the other requisites to a license and yet not be reputable. Other courts that have had to deal with similar laws have reached the conclusion that the term "reputable" is not used in any restricted or particular sense, but to convey its common meaning, the meaning generally ascribed thereto in every-day ordinary expressions calling for its use. That must be so, since there is nothing in the law indicating to the contrary. In People v. Dental Examiners, 110 Ill. 180, it was contended that the law, in providing that a diploma, to entitle its holder to a license to practice dentistry without an examination, must be issued by a reputable college having other characteristics similar to those required by the statutes of this state, left the board no duty to perform in determining reputability except to ascertain whether such other characteristics existed; that the establishment thereof established reputability. Such contention was condemned by the court, as appears from the opinion, as hardly worthy of serious consideration, in being held that "reputable," as the term is used in the law, means reputable and nothing else; that it is not equivalent of the other requisites mentioned therein, but is an additional requirement. The soundness of that decision cannot be reasonably questioned. In passing upon the application of a graduate of a dental college for a license to practice his profession the board must necessarily, by the exercise of judgment, determine whether his diploma comes from a reputable source, precisely as they must determine any other statutory requisite, and *reputable* must be deemed to mean *reputable* in the ordinary sense; "Worthy of repute or distinction; held in esteem; honorable; praiseworthy."—*Webster's Dictionary.* "Being in good repute; held in esteem; consistent with good faith."—*Century Dictionary.* (Dental Examiners v. People, 123 Ill. 227, 245.) What is reputable in a dental college must necessarily be determined, too, from the standpoint of men of scientific attainments in the line of work it represents, not that of mere laymen. The purpose of the law itself sufficiently indicates that. Moreover, the terms thereof leave no reason for doubt on the question. It provides that the members of the board shall be practicing dentists, and that the majority thereof shall be members of the Wisconsin State Dental Society.

Notwithstanding what has been said, doubtless the board might, in determining the reputability of a college, act upon such trifling circumstances as to be guilty of an abuse of their discretionary power and be a proper subject for coercion by mandamus, but it would take a strong case to warrant a court in convicting them of such an offense. The board here discovered that the Wisconsin College was without a dean, and it is in testimony that such a head for a dental faculty is indispensible to reputability of their institution from the standpoint of men learned in the dental profession. They further discovered that students were received and given advance standing, contrary

to the common understanding among college men of what is necessary to graduation with good scholarship and fitness for the practice of dentistry, and in a way liable to result in clothing disreputable men with honors of the school, and which resulted in diplomas being awarded to all of the class of 1901 without their having come up to the standard necessary to enable them to pass examination in several branches of study. The board further discovered, as they honestly supposed, and had a right to suppose—whether they were right or wrong on the facts is not material—that the persons in charge of the school were guilty of false pretenses in that 33 students were claimed to be in the institution, when there were but 21; and that all members of the faculty were paid salaries but two, when in fact three were not so paid. The board further discovered that the conveniences for imparting knowledge to students, and the manner in which the instructional work was carried on, were deficient in several material particulars. They examined three graduates of the class of 1900 in several branches as to the work during the last year of their course, the only time spent by them at the college, and found that they were deficient therein, not up to a reputable standard and unfit for graduation. Considerable other information was obtained upon which the conclusion of 1900 was based.

Enough has been stated to show that the trial court was right in holding that the conclusion reached in 1900 was amply justified by the evidentiary facts which the board supposed and had a right to suppose then existed, regardless of the real truth of the matter. Certainly, in the face of the evidence detailed, no room is left to say the board then abused its discretion assuming that it was then acting officially. It does not take a person possessed of special knowledge of the requisites of a dental college to render it capable of doing good work and be deemed worthy of praise, to understand that the faculty must have a head, commonly called a dean, possessing and efficiently exercising the powers incident to that position, and that it must have proper facilities for imparting scientific knowledge to students, and that the instructional work must be carried on in the manner supposed by members of the profession of dentistry in good repute to be reasonably necessary to praiseworthy work; further, that the institution must be so conducted as not to permit persons to wear its honors by graduating on the strength of work at other colleges, not properly evidenced as up to a reputable standard; and that those responsible for its management must not be guilty of any false pretenses in respect to any matter connected with its organization or otherwise, which the state board of dental examiners has a right to inquire into.

The learned circuit court erred in holding, as it seems to have done, that every time a person presents himself before the board as a candidate for a state license to practice dentistry, tenders his dollar, presents his diploma, and makes proof of the statutory requisites for the granting of his application, other than that of the reputability of the school graduating him, it is the duty of the board to make an original investigation of and determination as to that subject, by direct evidence of the character of the school at the time of the candidate's graduation, regardless of whether any evidence on

the question is tendered by him or any request is made for such investigation. The burden in such a case is on the candidate to demonstrate to the satisfaction of the board the reputability of his alma mater, not on the board to establish or disprove it. Having once rendered a judgment, so to speak, on a reasonable investigation, condemning the school as not reputable, the board may properly consider such judgment res adjudicata when the same subject again comes in question, in the absence of evidence fairly rebutting the presumption of the continuance of the former condition. The attitude of the relator indicates a desire for the benefits of the law, but a defiance of reasonable requirements. He was the proper actor to bring to the attention of the board the character of his school. If he had accepted that burden and offered proof to show that his alma mater was reputable, doubtless the board would have received and considered it in connection with all the other information in its possession. Had he requested the board to specify wherein it supposed the school was not up to a reputable standard, and made a reasonable showing that new light could be shed on the subject, it would doubtless have given him the desired information and reasonable opportunity to furnish such new light, or proceeded independently of him to obtain it. To say that the board, of its motion, under all circumstances, on every occasion of an application by a graduate of a dental college for license to practice his profession, is bound to make an investigation of the question of the reputability of the school, is to advance a proposition that has no support either in the letter or the spirit of the law or any principle governing such bodies. The character of the school having once been fairly determined by the board, when and under what circumstances a reexamination of the subject should be made must necessarily rest solely in its discretion so long as it acts reasonably. Obviously a refusal to reinvestigate the subject is warranted under ordinary circumstances till, by lapse of time or by some circumstances brought to the attention of the board, reasonable ground is furnished for a belief that a material change has or may have taken place. Circumstances alter cases. Where the facts are so easily ascertainable as they were in this case, the subject for investigation being within reasonable reach of all the members of the board; assuming, as we must, that they would be actuated in passing upon the application for a license by the single desire to deal justly; and that they would be willing, as they manifestly should be, to resolve reasonable doubts in favor of the candidate, so far at least as relates to the making of inquiries on questions of fact upon which his application must turn, lapse of time after one investigation, sufficient to allow a new class of graduates to come from the school, would secure a new reinvestigation of its character if that was requested, accompanied by a reasonable showing of a material change in regard to the matters in which it was found deficient upon the previous investigation. The policy of the law under consideration, so long as it stands the test of constitutional limitations, and that is not here questioned, is something with which courts have nothing to do. Since it requires the board to pass upon the reputability of the school in circumstances like those in this case, and places no limit upon the methods by which it shall gather information bearing on the subject for decision, it may

proceed in any reasonable way, and candidates for license must submit to its judgments unless they transgress the boundaries of reason and common sense.

To recapitulate, we hold that the trial court erred—1. In misconceiving the functions of mandamus proceedings, in that, while the court may compel a judicial or quasi-judicial officer or body to perform its duty, it cannot compel performance in any particular way where the underlying questions of fact are disputed. 2. In trying de novo the question of the reputability of the college in question. 3. In attempting to coerce the board into licensing the relator, yet deciding that it had not determined by a proper investigation the existence of the condition precedent to such action. 4. In deciding that the board acted wholly on evidence of the character of the college in April, 1900. 5. In deciding that the board acted illegally because it determined the character of the college wholly upon circumstantial evidence. 6. In holding that the evidence of the reputability of the institution in April, 1900, had no legitimate bearing upon its character in May, 1901, and was not under any circumstances sufficient to show its character at a later date. 7. In awarding a writ of mandamus based on facts determined by it de novo.

With the question of whether the trial court determined correctly, upon the evidence before it, the question of the reputability of the Wisconsin College, we have no concern, since, as indicated, the whole proceeding, as a trial de novo, was erroneous. The trial court should have viewed the decision of the board from their standpoint, not from its original investigation on the subject. We are unable to perceive that the board exceeded its discretionary power or so failed to exercise such power as to be guilty of an abuse thereof.

By the Court.—The judgment appealed from is reversed and the cause is remanded with directions to dismiss the action with costs in favor of the defendants.

SYLLABUS.

1. The scope of mandamus proceedings to coerce a person or board to the performance of a judicial or quasi-judicial duty extends only to compelling such person or board to act, not to directing him or it how to act, unless the underlying facts are undisputed, leaving no reasonable ground for action other than one way.

2. If a person or board is clothed with judicial or quasi-judicial power in the determination of questions of fact and the taking of some specific action upon such determination, and fails to make a proper investigation of such questions, it is not within the function of a mandamus proceeding, predicated on such neglect, for the court to assume and exercise the duty of such person or board and make such investigation.

3. The character of a dental college or other institution of learning at a particular time may be established by evidence of its character at a prior time not so remote but that it would be reasonable to assume that the prior condition still exists. The rule applies that, "when the existence of a person, a personal relation, or a state of thing is once established by proof, the

law presumes that the person, relation, or state of things continues to exist as before, until the contrary is shown, or until a different presumption is raised, from the nature of the subject in question."

4. The character of a dental college in April of one year is evidentiary of its character in May of the next year, and may have sufficient probative force in that regard to reasonably establish such later character.

5. The word "reputable," as applied to dental colleges in the law authorizing the state board of dental examiners to license persons to practice the profession of dentistry, without examination, who have graduated at such a college having certain specified requisites, means *reputable* in the general sense in which the term is ordinarily used; worthy of repute or distinction, held in esteem, honorable, praiseworthy.

6. In passing upon the application of a graduate of a dental college for a license to practice his profession in this state, the board of dental examiners must determine whether his diploma comes from a reputable source as an independent fact, considering the term "reputable" in its ordinary sense and measuring the character of the college from the standpoint of men competent to judge thereof by reason of their scientific attainments in the line of work for which such a college stands.

7. The state board of dental examiners, proceeding reasonably, is the sole tribunal under the statutes to determine the questions of fact to be solved, precedent to the licensing of a person to practice the profession of dentistry in this state.

8. When a graduate of a dental college applies to the state board of dental examiners for a license to practice his profession, the burden of proof is upon him to establish the reputability of such college.

9. The state board of dental examiners, having once determined the character of a dental college, may properly consider all questions in regard thereto at rest till, by lapse of time or otherwise, some reasonable ground exists for believing that its character may probably have changed.

10. The state board of dental examiners, having once determined the character of a dental college within all reasonable limits, when and under what circumstances the subject shall be reexamined rests solely in its discretion.

11. Since the law does not define the method by which the state board of dental examiners shall proceed to determine the reputability of a dental college when that is material to its official action, such board may perform its duty in that regard in any reasonable way it may deem proper, and candidates for licenses to practice the profession of dentistry must submit to its judgments so long as they are within the boundaries of reason and common sense.

CLOUDING OF MOUTH-MIRRORS.—Dr. Aufrecht has devised the following method for this difficulty: The mirror is first submitted to boiling water, and then placed in a one-half of one per cent solution of lysol. This method has the double advantage of sterilizing the mirror and of preventing its becoming clouded.—*Monatsschrift f. Ohrenheilkunde.*

Letters.

PULP AND DEVELOPMENT OF THE TOOTH.

FLORENCE, COL., Jan. 2, 1902.

To the Editor of the Digest,

MR. EDITOR:—I wish to ask a question which perhaps some of the readers of the DIGEST can answer. It is this—If the pulp in a half-erupted tooth be destroyed, will the development of the tooth be completed? Perhaps a better idea may be obtained if I state the case, which is this—A seven-year-old boy through an accident had the mesio-incisal angle broken off an upper right central incisor, so that the horn of the pulp could be discerned, making what appeared to be an exposure, although there was no bleeding. What is the best mode of procedure in a case of this kind?

Hoping some one may answer this in the February DIGEST, I am

Yours fraternally, E. L. YARD, D.D.S.

THE BOSS PHILOSOPHIZES.

(As Told by the Office Boy.)

The mornin' after the Runaway (like I was a-tellin' the last time), the Boss come into the Offis after breakfast, smilin' like he hadn't ever felt a Ache or Pain. He set down to look over his Male. They was Seventeen Circulars each one a-warnin' dentists to be Offul Careful how they used any other kind o' Obtundent exceptin' the kinds they was. An' they was Eight Bills, some o' them a-sayin' they'd Sue the Boss, without he'd call an' Pay straight Off. I seen in the Boss's Eye how he kind o' pitied People that gits Mad an' threatens, when they'd orter See it ain't a-goin' to do the least Speck o' good. I guess he Ketched me a-peepin' over his shoulder (an' I wanted to see if they was any Checks, so as I'd git my Back Pay), so he said, "James, I wisht I could learn some people Patience, the same as us Dentists has to Practice. Lots o' people seems to think about nothin' else but Money. It's Money here, an' Money there, an' no Rest. The sin o' Avarice stalks abroad in the Land. It's the mark of a Low-Down, Grovellin' Nature to be thinkin' about Dolers all the While. Don't you ever allow yourself to git to thinkin' Money is so mutch, James."

The Boss he tried to keep lookin' Straight Ahead, towards the Door, but it seemed like they was a sort o' Fascination about me, for in spite o' all, he Ketched my Eye, d'rectly. I was offul embarrassed. The only thing that kep' me from givin' the whole Shootin' Match away, was my havin' a Cock Eye. I knowed that he knowed that I knowed he couldn't tell whether I was a-lookin' at him or the Chandelier. Just then his Wife called him to know was there a Letter for her, an' that broke the Spell. He went on, "I've knowed some dentists, James, that had that Idea. Low, Ornery critters they be, every last one o' them. Always figgerin' out how mutch Money they're a-goin' to git out of a Job. Always complainin' if they can't pay their Debts. I say them kind o' dentists had orter git out o' the Perfession. Thinkin' more o' Money than they is of their Perfessional Pride! Money Grubbers is the wust Blotch on the Perfession today, James."

I was feelin' Offul Sneakin' by this time, an' had Haf a Notion to tell him he needn't mind about payin' me the Back Wages. It was the Biggest Relief when he took up a Newspaper an' shaded his Eyes. "You see, James, us dentists is the most Liberal Men, an' the freest from the Taint of Avarice, of any class o' Perfessional Men," he went on, absently lightin' a fresh Cigar with the largest Bill. "We work for People, an' after they've paid everybody else, we let 'em pay us. An' then we Turn Round an' we do the same way with other People—we pay 'em when we kin. Looks like everybody had orter be satisfied with the arrangement, don't it? Yet there's Lots o' People, an' even the Dental Depots, James, I blush to say, that'll look Grumpy at a dentist, without he pays up inside o' Sixty Days or so. Don't seem to make no allowances, James. Ain't got no Bowels of Compassion, Nor sentiment. Money Grubbers again, James, Scand'lous Money Grubbers!

"I mind when I entered the Dental College as a Student, the openin' lecture was all about how Noble a Perfession dentistry is. An' how Self-Sacrificin'. Derned if it ain't too, James. Ain't no special occasion for Rubbin' it into dental students though, that I kin See. May be all right to Learn 'em how Noble it is. But the Self-Sacrificin' part is somethin' any Freshman ought easy to Ketch onto. What got me so Mixed Up was this—from the way the Perfessor talked in that Lecture, I somehow got the Idee that the fundamental Aim of the Dental College was to *make* the incomin' mem-

bers of the Perfession Self-Sacrificin', an' Noble. I thought them things was a part of the Reg'lar Course. Later on I come to See that it was really the Gin'ral Public that made the Perfession Self-Sacrificin'. The job of Ennoblin' individual members seemed to have been left to the Dental College to attend to, as somethin' that didn't in no way concern the Gin'ral Public. What the Gin'ral Public seemed to have Uppermost in Mind, was to git its Teeth Pulled as cheap as possible. So the Gin'ral Perfession *had* to be Self-Sacrificin'. Their bein' Noble was somethin' they took upon theirselves, somethin' wholly Extraneous, James. It's a Beautiful Spectacle, James, this of dentists studyin' to be so Self-Sacrificin' an' Noble! Some Perfessions that might be Named ain't Dignified thataway. They tell me Law Students seldom gits Bibles when they Graduate, an' they ain't no Great Stress laid on cultivatin' habits o' Self-Sacrifice. It ain't Assumed that things is so Lop-Sided. Its the Clients that's supposed to attend to the Self-Sacrificin' part. In short, the matter doesn't seem to be discussed at all."

The Boss he let slide a Big Sigh at this p'int. I couldn't understand all he was a-sayin', but I seen he was talkin' Sarcastic. All of a sudden he went off on another Tack, like he does sometimes. Says he, "James, if you've really made up your Mind to be a Dentist, I can put you in the way of makin' a lot more Money out o' it than what I've made." I was surprised when he said that, for I hadn't ever said a Word about bein' a Dentist, in fact I had decided lately I'd be a Undertaker, like he advised me once. They ain't so Offul Many funerals, an' you git to go to Base Ball. An' People stays still an' doesn't Squirm Round an' Pester you to Deth when you're workin' on 'em. An' if they don't Pay you kin dig 'em up an' Sell 'em to the Dental Colleges. But I never let on, an' d'rectly he said some more. It was Funny, but what he said was what I'd often thought I might say to him sometime. Said he, "Things wouldn't be so bad, James, if dentists would learn themselves to study Human Nature. An' they'd orter learn to rate theirselves higher. You want to Remember, when you come to Practicin' Dentistry, James, that the Public rates a man jist about as he rates himself. Or a trifle lower. So you've got to Snort an' Blow an' let on' you're Eight Feet high, when you ain't only Five, an' then the Gin'ral Public will discount your claim a little, an' make you out to be about Seven Foot Four. It's a Curious fact, James, but

I've noticed this—you take a Man that gives out that he's a Deuce of a Feller, an' people will laugh at him, an' poke Fun at him, year after year. But they git tired o' Laughin' so Mutch, after a Spell, an' in the end they come to believe he really is a Deuce of a Feller. So you see, James, the man that gits along an' gains a firm standing with the public, is the man that ain't afraid of bein' Laffed at."

Here the Boss he swelled up his Chist, an' he Jammed his Thumbs in his Arm-holes, an' there he set with his Legs Crossed, an' a-swingin' one Foot up an' down, keepin' Time with his Thoughts. An' he Squinted at me with one Eye half shet, kind o' Sly, like he mistrusted I wasn't Keen enough to understand what he meant. But I knowed well enough. I had to let on like I was most Offul impressed, an' how I did Admire to Hear him talk, an' after I'd nodded Haf a Dozen times, like I couldn't find Words to say how True it all was, an' how it seemed Strange other dentists hadn't ever thought about these Things, he went on. "Another thing, James, you take a man that's weak in one Perfession, an' he'll be weak in any Perfession. Lots o' dentists that's thinkin' o' changin' to some other Business doesn't seem to think o' that. It's mostly in the Man, James. It ain't in the Perfession so Mutch. The main thing is this, James, you've got to be firm with People. It's all right to git the Reputation o' bein' Good Natured an' Obligin, but it's jist as well sometimes to make People the Lest Mite afeard o' you, too. Some dentists seem to think if they Speak Up, an' say what they'll do an' what they won't do, they'll drive Patients away. But the truth is, the only way to keep some People froze to you, is to let on like you can't noway accommodate them. It's Offul Funny, but it's true, James. Say now for instance, you're a dentist, an' your Father comes in, an' he wants a Tooth filled. You say to him, 'I ain't meanin' no Offense, but the fact is, I ain't so Offul Stuck on Workin' for my own Kin. I reckon you'd better go to Dock Peabody, acrost the Street.' The Old Man he looks kind o' Hurt, an' says he: 'I don't think I'd dare trust any dentist but you.' So then you go ahead, an' you charge him Ten Dolers, when you're Done, an' he says, 'I'm Offul Obliged,' an' he pays you right away, an' don't ast for no Receipt, but when he Goes Out he says, 'I feel like that was a Mighty Good job.' But if you say in the Start, 'This fillin is worth Ten Dolers at a low estimate, but

you bein' my Dad I'll do it for Three Dolers, 'cause I wouldn't like you to go to no other dentist,' why he'll forgit all about the Ten Doler part, an' he'll be Privately thinkin' you'd orter do a mighty fine Job for Three Dolers, an' when you're Done he'll say, 'I'll jist watch a Bit an' see how this is a-going to do, an' some day you'll git your Pay, all right.' So you'll have to wait Six Months before he'll Pay."

I was wishin' the Boss would let up, so as I could read a book about "The Boy Detective." He's got a way of sayin' these things about once so often, to kind o' Brace himself up, after somebody has Bluffed him. But he kep' a-goin' still, an' this time he said things I didn't remember ever Heerin' him say before. Says he: "James, you want to remember another thing, if you're a-goin' to be a Dentist, us Dentists isn't Capitalists, like Business Men, an' people isn't supposed to have Runnin' Account's with us, like we was the Corner Grocery. When the work is Done the bill had orter be Paid, right away. An' another thing, James, No dentist had orter be ast under any Circumstances, to work under his Usual Fees. Sometimes people comes in here, an' they wants me to do that Very Thing." (I thought I'd listen, now, for I recalled Mis' Richards, an' how she got so mutch work done for Nothin', only the Day before, an' I was Curious to See if he Dast Pertend he'd forgot all about that, a-ready.) "They'll bring in some Poor Relation, an' they'll ast me outright to do the work Cheap. Then I say, 'I'm Offul Sorry, but I can't do it; it demoralizes my Practice to lower my prices, an' besides, I find in the end I'm left to puzzle out a kind o' Chinese enigma, tryin' to Find Out who is Reely Responsible for payin' the Bill. Some People seems to think I am. You look after your own Private Charities an' I'll look after mine. Don't ast me to go into Cahoots with you.'"

The Boss he begun lookin' Offul Stiddy at my Game Eye again. It seemed like it was a Snake charmin' him. I looked back, jist as Stiddy, like I was havin' my Picture took. It was like us two was in Swimmin' an' a-tryin to see which could keep his head under longest. I thought I'd Bust, but I beat him about Half a Second, he had to Look Away first. It was him looked Guilty, not me. "I know I hain't always lived up to these Sentiments, James. It ain't reely only lately that I've been impressed with these truths. But I kin say in all candor, James, the work o'

Reform has Set In good an' strong with me. You'll see I'm a Different Man, from this on. People ain't a-goin' to Bluff me no more, you kin Bet."

The Boss went on a-sayin' a Lot More, but I was behind the fire screen readin' my Book, and all I remember about the rest he said was jist when he was Gittin' through. Says he, "The most important thing is this, James, you musn't let patients Dictate to you. If you do you're Lost."

So then he Went Out in the yard to help take in the Wash, an' presently I let in a Lady. When the Boss come in she said, "I've been recommended to you as a Dentist that is reasonable in your Charges, an' I want two Teeth filled. But I always make a Bargain first, so you must be Reel Reasonable, an' not charge me too Mutch." So the Boss he smiled an' said he hadn't had no Complaints on that Head, but lots o' Dentists complained 'cause he worked so Cheap, an' he wasn't in no Combine, an' lots o' Stuff. Then he looked at the teeth an' says he, "Them's large Cavities, an' it'll take me Two Hours, an' I guess I'd orter git about Four Dolers for the Job, 'cause it's bigger than some. In fact, Four Dolers is Reely too Cheap."

The Boss he stood a-blinkin' at her, an' a-lookin' kind o' ashamed, like he knowed well enough he was a-tryin' to Bilk her out o' Two Dolers. I was wonderin' what I could say to Help Out, when the Lady she spoke up. Said she, "That is a Exorbitant Charge, I'm sure. You done some for my sister, an' you only charged her a Doler apiece." So the Boss he looked in his Book, an' says he, "Them wasn't so Big, though." But she looked him straight in the Eye, an' says she, very firm an' onflinchin,' "I kin git this work done jist as good in Pokeberry Junction, where I live, an' I've had my mind made up for some Time, that Two Dolers was as mutch as I could afford to spend on my Teeth, they've cost so mutch a'ready." Then the Boss he said, after pertendin' to think it over a Minute, "Well, all right; I don't want to be Mean about it." So he went to Work, an' when he was about Haf Done, he found they was Two Other decays in the other sides of the same Teeth. So says he, "You hadn't orter hold me down to takin' Two Dolers, when they's Two More Cavities that I didn't see." But the lady she said a Bargain was a Bargain, an' she Let On like she wouldn't pay Nothin', without he'd fill them other places too. So the Boss he Got Red, but he Went On an' done it An' when he was all done she said kind o' Stiff, "if you'll make me out a Receipt I'll pay you now." Then she was Offul Dignified while she was puttin' on her Things, an' she said "Good Day, Sir," kind o' Freezin' in her Manner, an' I knowed we'd never do any more Work for her.

FRANK W. SAGE.

Cincinnati, O.

The Dental Digest.

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Editorial.

CROWN COMPANY'S FAVORABLE DECISION IN THE JAMES ORR KYLE CASE ANNULLED BY JUDGE TOWNSEND BECAUSE OF COLLUSION.

Our readers will remember that on July 31, 1899, Judge Townsend gave a decision favorable to the International Tooth Crown Co. by reversing the former decision of the Court which declared the Low bridge patent to be invalid. The defendant in the case was one James Orr Kyle, a brother-in-law of Dr. L. T. Sheffield, the president of the Crown Co. From the start we suspected collusion, for we knew that the Crown Co. had bedeviled the testimony and witnesses which the Protective Association put forward in the previous suit, and that Kyle had not stood all if any of the expense of his defense.

In November, 1900, upon our motion and petition, Judge Lacombe directed Sheffield and Kyle to attend and submit to an examination before a Mastery in Chancery as to our allegation of the collusive and fraudulent character of the suit in question. The examination of these two individuals began November 8 and lasted until the 14th, and disclosed the fact that the entire expense of both sides of the litigation—the Crown Co. and Sheffield on one side as plaintiffs, and Kyle on the other as defendant—was borne directly and indirectly by the Crown Co. and Sheffield. Upon cross-examination Kyle admitted that he never even went to the alleged lawyer's office, and that the only contribution he made to his defense, directly or indirectly, was "carfare and drinks for his attorney."

Having thus proven that the Kyle case was won by fraud, the Protective Association presented this evidence to Judge Townsend and filed a petition asking that he set aside his former decision in the case and also make the Crown Co. stand the costs of taking the testimony before the Master above referred to.

Briefs were filed by the Association and Crown Co., and the matter was argued before the Court by the lawyers on both sides. January 20, 1902, just as the DIGEST was going to press, we received a telegram from the Association's local attorney in New York City, stating that Judge Townsend had set aside his former decision in the Kyle case on the ground of collusion. We cannot give full particulars this month, but in the February DIGEST will take the matter up in detail. Suffice it to say that this affords great cause for congratulation to the members of the Association and the profession at large, for conditions are now about the same as they were five years ago, when the Low bridge patent had been declared invalid, and the Crown Co. have no more if as much ground for or hope of success in their warfare upon the dentists of this country than they had at that time.

POWER OF DENTAL EXAMINING BOARDS.

On page 58 of this issue we print a recent decision by the Supreme Court of the State of Wisconsin, which upholds a late ruling of the Wisconsin State Board of Dental Examiners, and not only defines the power and scope of that board, but establishes precedents for all similar organizations. Reference is made therein to a decision of the Supreme Court of the State of Illinois (People vs. Dental Examiners, 110 Illinois, 180). As this decision is quite as far-reaching and definite as that of the Wisconsin Court, we give same herewith. On March 18, 1883, a young man holding a diploma from a dental college in another state presented his diploma to the Illinois State Board of Dental Examiners and asked for a license. For some reason which does not appear the board refused to issue a license to him to practice dentistry in this state, so the young man applied for a writ of mandamus compelling the board to issue him a license. The writ of mandamus was refused, and in commenting on the matter the Supreme Court of the State of Illinois delivered the following opinion:

It is provided by the first section of an act approved May 30, 1881, entitled "An Act to Insure the Better Education of Practitioners of Dental Surgery, and to Regulate the Practice of Dentistry in the State of Illinois," that "It shall be unlawful for any person who is not at the time of the passage of this act engaged in the practice of dentistry in this state to commence such practice, unless such person shall have received a diploma from the faculty of

some reputable dental college duly authorized by the laws of this state, or of some other of the United States, or by the laws of some foreign country, in which college or colleges there was, at the time of the issue of such diploma, annually delivered a full course of lectures and instruction in dental surgery." And in the sixth section of the same act, after providing for examination before the board of dental examiners of all applicants for license to practice dentistry, is the following provision: "But said board shall at all times issue a license to any regular graduate of any reputable dental college, without examination, upon the payment by such graduate to the said board of a fee of one dollar." Other provisions of the act prohibit any person to practice dentistry without a license from the board, except such as are properly enrolled as having been practitioners at the time of the passage of the act.

The contention of the relator is, that the Board of Dental Examiners have no power to decide what is or what is not a "reputable dental college"—that the law has itself defined what is a "reputable dental college," in providing that it shall be "duly authorized by the laws of this state, or of some other of the United States, or by the laws of some foreign country, in which college or colleges there was, at the time of the issue of such diploma, annually delivered a full course of lectures and instruction in dental surgery." We are unable to appreciate the force of this position. The word "reputable" would seem to be used here to express the meaning ordinarily attached to it. If it had been intended that diploma from any dental college, or a diploma from any dental college "duly authorized by the laws of this state, or of some other of the United States, or by the laws of some foreign country, in which college or colleges there was, at the time of the issue of such diploma, annually delivered a full course of lectures and instruction in dental surgery," we must presume the language would have so said. By using the word "reputable" we must presume the General Assembly meant "reputable." And since it is not used as being the equivalent of and convertible for the other requirements in regard the college, but as in addition thereto, we must presume it was intended to be so construed.

As a part of the current history of the times, and as an aid at arriving at the legislative intention, we know there were colleges of different kinds authorized by the laws of states in which they were located, in which there were pretended to be annually delivered full courses of lectures and instruction upon the arts and sciences professed to be taught, that were not "reputable" because they graduated for money, frequently without any reference to scholarship. A diploma from such an institution afforded no evidence of scholarship or attainments in its holder. It was a fraud and deserved no respect from anybody, and it was as against such diplomas the law was intended to protect the public, and therefore required that the colleges be "reputable." Whether a college be reputable or not is not a legal question but a question of fact. So, also, are the requirements in regard to the annual delivery of full courses of lectures and instruction. These questions of fact are, by the act, submitted to the decision of the board—not in so many words, but by the plainest and most necessary implication. Their action is to be predicated upon the existence of the requisite facts, and no other tri-

bunal is authorized to investigate them, and of necessity therefore they must do so. The act of ascertaining and determining what are the facts is in its nature judicial. It involves investigation, judgment and discretion.

The office of the writ of mandamus is, in general, to compel the performance of mere ministerial acts prescribed by law. It lies, however, also to subordinate judicial tribunals, to compel them to act where it is their duty to act, but never to require them to decide in a particular manner. It is not, like a writ of error or appeal, a remedy for erroneous decisions. (Judges of Oneida Common Pleas v. People, 18 Wend, 92.) And, as is said by the court in People ex. rel. v. Common Council of Troy, 78 N. Y. 33: "This principle applied to every case where the duty of performance of which is sought to be compelled, is in its nature judicial, or involves the exercise of judicial power or discretion, irrespective of the general character of the officer or body to which the writ is addressed. A subordinate body can be directed to act, but not how to act, in a matter as to which it has the right to exercise its judgment. The character of the duty, and not that of the body or officers, determines how far performance of the duty may be enforced by mandamus. Where a subordinate body is vested with power to determine a question of fact, the duty is judicial, and though it can be compelled by mandamus to determine the fact, it cannot be directed to decide it in a particular way, however clearly it be made to appear what the decision ought to be." See, also, Kelly et. al. v. City of Chicago, 62 Ill. 279.

Illustrations of the principle will be found in People v. Common Council of Troy, supra, Freeman v. Selectmen, 34 Conn. 406, Hoole v. Kinkead, 17 Nev. 217, Bailey v. Ewart, 52 Iowa 111, Berryman v. Perkins, 55 Cal. 483, People v. Contracting Board, 27 N. Y. 378, and other cases cited in argument by the Attorney General.

The demurrer here does not admit that the board of dental examiners fonnd that the college at which the relator was graduated was reputable, although it does admit that to be the fact. But since the board cannot be compelled to decide the question that way, although the evidence might clearly sustain it in so doing, there is no ground for mandamus. The demurrer must be sustained, and the petition dismissed.

For many years there has been considerable friction between the dental colleges and the state boards of dental examiners, as to the respective powers of each. The Wisconsin and Illinois Supreme Court decisions seem to settle the matter for these two states at least, and we have no doubt the Supreme Courts of other states would decide in the same manner if test cases were brought before them. It will probably be admitted by all concerned that the colleges have no power to make laws to govern anyone but themselves. The state is their creator, and they are subject to its laws and its discipline just as are any other corporate institutions. The state frames laws for the government of all within its borders, and no

exception is made in favor of any college or individual. The college may grant its diploma, but it can issue no license to practice. This power belongs to the state alone, and for the purpose of carrying same out it has its agency in the state board of dental examiners.

When the diploma reaches the board the powers and functions of that body are brought into action. If not already done, it becomes its duty to determine the reputability of the institution which issued the diploma, and here the question of reputability becomes almost the paramount issue. If the members of the board are not already sufficiently advised, their duty carries them into an investigation of the college itself, to a knowledge of the course of study of the arts and sciences taught by it, and the degree of efficiency to which they are taught. The board also has the right to ascertain the degree of education and moral caliber possessed by all students who are received for matriculation, and to know the character and worth of all teachers connected with the college.

While the stand taken by the courts on these questions may come as a surprise to some, we know that no "reputable" college will object, as it has nothing to fear, in fact, it will be glad to give as much information as possible to the board. Although it is only recently that the state boards have tried to enforce their authority, the fact remains that the dental colleges of their own free will have been steadily advancing, which is greatly to their credit. In the past the state boards have not been equal to the responsibilities imposed upon them, and not only have they been in most cases sadly remiss in their duty, but in far too many instances they have not been worthy of confidence or credit. Better men, however, are now being put on these organizations, and with such power back of them most capable dentists in this country should be willing to serve on them. On the other hand, none but those of undoubted ability and unquestioned honesty should be allowed to assume these responsible positions, and it will be to the interest of the colleges, the profession and the community at large to see that a wise choice is always made. The great majority of the dental colleges of this country are striving to elevate the practice of dentistry and to increase the fitness educationally and morally of those who enter our profession. The state boards can and should assist the progressive colleges in the forward movement, so that the schools as a whole will be materially benefitted and not harrassed by these court

decisions. With only good men on the state boards, and with those men trying working simply for the elevation of the profession and the protection of the community, we predict an era of unprecedented harmony between the colleges and boards.

Notices.

G. V. BLACK DENTAL CLUB.

The G. V. Black Dental Club will hold its third public clinic in St. Paul, Feb. 20-22, 1902. All dentists are cordially invited to attend.

J. M. WALLS, Secy., St. Paul.

VERMONT STATE DENTAL SOCIETY.

The twenty-sixth annual meeting of the Vermont State Dental Society will be held at Hotel Berwick, Rutland, March 19-21, 1902.

THOMAS MOUND, Sec'y, Rutland.

NORTHWESTERN ALUMNI ASSOCIATION CLINIC.

The Alumni Association of Northwestern University Dental School will hold its annual clinic at the College building, Madison and Franklin Streets, Chicago, Thursday, Feb. 22, 1902. All members of the profession are invited to attend. G. B. MACFARLANE, Sec'y, 70 State St., Chicago.

A. V. HARGETT, Pres.

INSTITUTE OF DENTAL PEDAGOGICS.

The ninth annual meeting of this organization was held at Pittsburg, Dec. 31, 1901-Jan. 2, 1902, and after a very successful and profitable meeting the following officers were elected: Pres., H. J. Goslee, Chicago; V.-P., J. D. Patterson, Kansas City; Sec'y and Treas., H. B. Tileston, Louisville; Mem. Ex. Board, D. R. Stubblefield, Nashville.

WISCONSIN BOARD OF DENTAL EXAMINERS.

The next meeting of the Wisconsin State Board of Dental Examiners for examination will be held at Hotel Pfister, Milwaukee, Jan. 28-30, 1902, beginning at 9 a. m. Jan. 28. All examinations are conducted in the English language and in writing. A practical examination is also required, and all applicants must furnish their own instruments patients and material.

W. H. CARSON, D.D.S., Secy., Goldsmith Bldg., Milwaukee.

CHICAGO ODONTOGRAPHIC SOCIETY.

At the annual meeting of the Chicago Odontographic Society, held Dec. 16, 1901, the following officers were elected for the ensuing year: Pres., C. N. Johnson; V.-P., W. T. Reeves; Sec'y, F. H. Zinn; Treas., G. N. West. Board of Directors, G. B. Perry, F. E. Roach, L. O. Green. Board of Censors,

F. B. Noyes, W. Girling, D. A. Hare. Program Committee, C. E. Bentley, L. S. Tenney, H. J. Goslee. The fifteenth anniversary will occur in December, 1902, and it is the intention of the society to celebrate the event by giving a rousing clinic extending over two days and a meeting that will be memorable in its history. Prominent dentists from all parts of the country will be invited to be present. The program committee have already made plans for one of the most notable meetings ever held in this country.

F. H. ZINN, Sec'y.

SOUTHERN BRANCH NATIONAL DENTAL ASSOCIATION.

The fifth annual meeting of the Southern Branch of the National Dental Association will be held at Atlanta, Ga., Feb. 18–21, 1902. Atlanta is now the most favorably located and best equipped city in the South for holding such a meeting, which will insure a large attendance. The Southeastern Passenger Association has given a rate of one and one-third fare for the round trip on the certificate plan. An extension of ten days will also be given on these tickets after the close of the meeting, so as to enable those in attendance to visit the Charleston Exposition. A cheap round-trip ticket from Atlanta to Charleston will be on sale, and an effort will be made to have a special train for the dentists. Delegates living beyond the territory of the Southeastern Passenger Association can purchase a tourist's winter ticket to Charleston by way of Atlanta, as these tickets have a stop-over privilege of fifteen days at Atlanta. H. H. JOHNSON, Pres. S. B. N. D. A., Macon, Ga.

C. L. ALEXANDER, Cor. Sec. S. B. N. D. A., Charlotte, N. C.

CHICAGO ODONTOGRAPHIC SOCIETY BANQUET.

The annual banquet of the Odontographic Society of Chicago was held at the Palmer House Jan. 20, 1902, at 7 o'clock, and about 125 members and guests sat down to an excellent dinner. The following program was carried out: Dr. L. S. Tenney, the toast-master, filled that office in a very happy manner. He opened the ball with a bright little speech, and stated that he would have made it longer had his friends not made dire threats against his so doing, one man even going so far as to tell him such action was expressly forbidden by the constitution and by-laws of the Society. Prof. Edmund James of the University of Chicago followed with a masterly address. Dr. Edward Bak gave a piano solo which called forth an encore. Col. H. H. Blake recited an original poem, entitled "The Old Linden Tree," and graphically described the circumstances which led to his writing it. The Rev. Jos. K. Mason followed with an address, delivered in his usual eloquent manner. Dr. Homer A. Drake then sang "The Stein Song," and the company joined in the chorus, with a zest which showed them to be not unfamiliar with the title. In response to a vigorous encore Dr. Drake gave the old favorite, "Illinois," and "they all joined in." This was followed by a Gypsy song, after which "the DeReszke of Chicago," as Dr. Bentley termed him, was allowed to take his seat. Mr. Opie Reed, the famous author, closed the program with two or three of his inimitable stories, at least he thought

that would close it, but he had to respond to several encores. Impromptu remarks were then made by Drs. J. N. Crouse, C. E. Bentley and T. W. Brophy, after which the company broke up, everybody pronouncing the banquet one of the most successful and enjoyable ever held by this young giant among local dental societies.

News Summary.

C. F. SHEAFER, a dentist at York, Pa., died suddenly Dec. 25, 1901.

C. F. STIPP, a young dentist at Toledo, O., died Nov. 21, 1901, of typhoid pneumonia.

S. S. BROWN, 32 years old, a dentist at Chillicothe, Mo., was killed Dec. 18, 1901, by a fall.

J. B. SNOVER, 25 years old, a dentist at Philadelphia, died Dec. 28, 1901, from typhoid fever.

J. W. FRAZIER, 28 years old, a dentist at Sewickley, Pa., died Jan. 4, 1902, from typhoid fever.

GEORGE W. CALDWELL, 58 years old, a dentist at Philadelphia, died from apoplexy Jan. 1, 1902.

J. H. ALLEN, 31 years old, a dentist at Birmingham, Ala., died Jan. 14, 1902, from pneumonia.

CEMENT.—"There is no cement that will repair broken promises."—*Ex.* Try good "Fellowship."

J. P. KELLY, 31 years old, a dentist at Newburyport, Mass., died Dec. 18, 1901, from lung trouble.

C. A. MARVIN, 59 years old, a dentist at Torrington, Conn., died Jan. 10, 1902, from heart trouble.

H. H. ALLEN, 71 years old, a dentist at Thorntown, Ind., died Dec. 30, 1901, from a stroke of apoplexy.

PENNSYLVANIA DENTAL EXAMINERS issued licenses to 28 of the 44 applicants who came before them in December, 16 failing.

BANKRUPTS.—E. R. Angier, Boston, Mass., owes $2,495.38, no assets. D. A. Baker, Phoenix, N. Y., owes $1,097.17; assets, $100.00.

PAINFUL EXTRACTION.—"What is the matter, old man, you look bad?" "Just been to the dentist and he extracted sixty dollars."

E. E. HUGHES, formerly a prominent dentist in Des Moines, Ia., was sent to the State Asylum, Jan. 3, 1902. Drink brought on insanity.

EDWARD BOWLUS, 69 years old, formerly a dentist at Middletown, Md., died at Frederick, Md., Jan 14, 1902, from hemorrhage of the lungs.

T. W. BECKWITH, 44 years old, a dentist at Sterling, Ill., died at Tucson, Ariz., Jan. 14, 1902, where he had gone last month for his health.

WILL TAFT, grandson of Dr. Jonathan Taft, died last month at Manila, P. I., where he went recently to engage in the practice of dentistry.

F. M. SIMCOCK, a young dentist at Burnet, Tex., was shot and killed Dec. 21, 1901, while resisting arrest. He shot first and fatally wounded the officer.

A. F. HUDSON, a young dentist, formerly of Nashville, Tenn., died Nov. 25, 1901, in Ecuador, where he went three years ago to establish a practice.

JOHN R. MCCOY, a young dentist at Bloomington, Ill., and formerly at Chicago, died suddenly Dec. 28, 1901, supposedly from an overdose of cocain.

SPRINGFIELD (O.) DENTAL SOCIETY was organized Jan. 13, 1902, and Dr. T. A. Lewis was elected President and Dr. W. C. Lupfer Secretary and Treasurer.

WHAT "D.D.S." MEANS.—A subscriber to the DIGEST who is located in a rather unproductive town writes that in his case "D.D.S." stands for "Disgusted Dental Struggler."

THOMAS DELAVAN DEVOE, 69 years old, a dentist and member of a prominent Nova Scotia family, died of consumption Dec. 21, 1901, at St. Louis, and was buried in the potter's field.

ROBBERIES.—This time two unfortunates. A dentist at Los Angeles, Cal., had $50 worth of gold taken from his office, and another at Dayton, O., lost $25 in cash and $15 worth of gold.

O. H. LANG, a dentist at Milwaukee, died suddenly Jan. 8, 1902. He was in the habit of taking morphin for insomnia, and it is thought that death was due to an overdose of the drug.

WESTERN INDIANA DENTAL ASSOCIATION at its January, 1902, meeting elected the following officers: Pres., C. F. Williams; V.-P., M. T. Goodman; Secy., B. B. White; Treas., R. Adams.

NERVOUS SPECIALIST NEEDED.—He—"You know if you worry about every little thing it is bound to affect your health." His Wife—"Yes, I know. That's one of the things I worry about."

ALLEGANY COUNTY (N. Y.) DENTAL SOCIETY at its annual meeting Jan. 14, 1902, elected the following officers: Pres., W. W. Coon; V.-P., James Wardner; Sec'y, W. F. Spargur; Treas., E. V. Sheerar.

MINNESOTA DENTAL BOARD.—The governor has reappointed Dr. C. H. Robinson of Wabasha to the state board of dental examiners for three years and Dr. J. M. Walls of St. Paul for the same period.

A DRAW.—The Nauvoo (Ia.) *Rustler* says that the city needs a dentist, and the *Independent* says that one could not make a living there. It may be necessary to appoint a board of arbitration to settle the matter.

ISAAC KNAPP DENTAL COTERIE.—The annual meeting of this organization took place at Ft. Wayne, Ind., Jan. 9, 1902, and the following officers were elected: Pres. J. H. Adams; Sec., E. E. Keel; Treas., J. D. Coyle.

CHILDREN'S TEETH CANNOT BE EXAMINED.—The dentists of Rochester, N. Y., recently requested the board of education of that city to allow them to examine the teeth of public school pupils, but the Board denied the request, on the ground that if dentists were allowed to examine the teeth other classes of people would want to examine the pupils' eyes, noses, feet, etc.

DENTAL TECHNIC CLUB (Kansas City, Mo.) at its regular meeting Jan. 11, 1902, elected the following officers: Pres., F. G. Worthley; 1st V.-P., S. E. Johnson; V.-P., K. P. Ashley; Sec'y, F. W. Franklin; Treas., R. M. Seibel.

"NORMAL SOLUTION.—A solution of known strength used in volumetric analysis, usually made so that one cubic centimeter contains a number of milligrams equal to the molecular weight of the compound."—*Standard Dictionary.*

LUZERNE AND LACKAWANNA COUNTIES (PA.) DENTAL SOCIETY met Dec. 17, 1901, and elected the following officers: Pres., E. J. Donnegan; V.-P., J. H. Meyers; Rec. Sec., E. J. O'Hara; Cor. Sec., O. R. Richards, Treas., Nellie Carle.

READING (PA.) DENTAL SOCIETY at its January, 1902, meeting elected the following officers for this year: Pres., E. W. Bohn; V.-P., George S. Schlegel; Treas., Elwood Tate; Secy., C. R. Scholl; Ex. Com., S. E. Tate, W. D. DeLong, H. L. Cleaver.

CLEAN FLASKS.—Put a coil of sheet zinc into the water in the vulcanizer and it will prevent the formation of much of the black oxids which form on iron flasks. After using a few times the flasks will soil the fingers but very little.—*Brit. Jour. Den. Sci.*

DANGEROUS PRECEDENT.—First Doctor—"What makes you think the patient will die if you don't perform the operation?" Second Doctor—"That isn't the point. This is a new disease, and if he should live without an operation it would establish a precedent."

SOUTHWESTERN (WASH.) DENTAL ASSOCIATION.—A society with this name was organized last month at Aberdeen, Wash., and the following officers were elected: Pres., S. C. Maker; V.-P., M. D. Coons; Secy., F. L. Nail; Treas., E. E. Lane; Trustee, W. J. Long.

UNLIMITED NERVE.—"Tut, tut," smiled the dentist. "That nerve does not reach up so far as you say. It is not a foot long at all. That's all in your mind." "Um-m-m-,!" groaned the writhing man; "it surely feels as if it were nearly all there."—*Atlanta Constitution.*

A. READ died Dec. 29, 1901. He was a native of Pennsylvania and began the practice of dentistry in this country, but had been a resident of Copenhagen, Denmark, since 1860. He was patronized and honored by the royal families of Denmark, Sweden and neighboring countries.

SALIVARY VOMIT.—Morning vomiting of nearly pure saliva is sometimes observed in subjects suffering from chronic alcoholic pharyngitis. It is distinguished by testing for potassium sulfocyanate with a weak solution of ferric chlorid, getting a blood-red coloration if positive.—*Ex.*

TO CLARIFY WAX.—Melt in hot water bath, then remove from water bath and bring to a slow boil on the stove. Into the boiling wax pour a fresh egg, and stir for three or four minutes till the egg is thoroughly cooked. Strain through a piece of cheesecloth, to remove all pieces of egg, and you will have your wax as clean and pure as when bought from the dental depot.—*Items of Interest.*

CONSTITUTION AND FLAG.—Physician—"You have a sound constitution, but you are overworked and a little run down. That is why your energies have begun to flag." Patient—"Then in my case the constitution does not follow the flag. I am glad to have that point cleared up."

MARRIED.—C. L. Blodgett, Yankton, S. D., Dec 2; Harry Boysen, Dubuque, Ia., Dec. 25; John Davis, Moline, Ill., Dec. 25; J. W. Hicks, Bells, Tenn., Dec. 27; T. H. McKenzie, Three Oaks, Mich., Dec. 30; O. B. Smith, Waukegan, Ill., Dec. 18; Alvah Truby, Canton, O., Jan. 1, 1902; S. J. Zerfall, Mechanicsburg, Pa., Dec. 20.

TRI-CITY DENTAL SOCIETY held its annual election at Omaha, Neb., last month and elected the following officers: Pres., Harry Foster; V.-P., P. T. Barber; Secy., Z. B. Clark; Treas., H. J. Wallace. The society has prospered financially and numerically during the past year, and has increased its membership by fifteen new names.

POLISHING CROWNS.—To prevent marring a gold crown when polishing, wet the inside of the crown with soap solution, fill it with modeling composition, and while the latter is still soft thrust the end of a stick or instrument-handle into it. When the crown is finished soften the composition in warm water and remove.—*Dental Hints.*

STUDENTS CAN'T PULL TEETH.—The attorney general of Kansas last month handed down a decision to the effect that no one could practice dentistry in the state without holding a diploma from a dental college or a license from the state board of examiners, which action will bar students at college from practicing before they graduate.

NEW DENTAL JOURNAL.—We are in receipt of a copy of *"The Dental Era,"* a new dental publication which comes from St. Louis. The editors are Drs. J. H. Kennerly and Herman Prinz. The sea of dental journalism is not an easy one in which to navigate, but we know no men in St. Louis more competent to start an enterprise of this kind than the two named. We heartily welcome *"The Dental Era,"* and bespeak for it the kindly consideration of our readers.

VOICE LOST AS PENALTY.—According to newspaper report, L. L. Yonker, a dentist of Bowling Green, O., has lost his voice, and his friends insist that it is a direct manifestation of Providence. One evening the dentist and some friends were talking together when a discussion arose about the weather. One man predicted that the next day would be stormy, but Dr. Yonker disputed this and added that if it was stormy he hoped never to speak again. The next morning it was raining, and his voice had left him in the night.

AN INDIANA ROMANCE.—Paoli, Ind., has just been the scene of one of those little bucolic dramas that are peculiar to the Hoosier state, and it is worthy the pen of a Booth Tarkington. A dentist in the town wrote a letter to a comely young woman, telling her that he loved her. Inasmuch as he was a married man she determined to avenge the insult by horsewhipping him. The dentist, however, armed himself, and with a few of his friends barricaded his office. The damsel then rang the village fire-bell, and told the

story of her wrongs to the crowd which collected. The crowd thereupon gathered around the dentist's office and demanded that he come forth, which he finally did on promise that he should not be horsewhipped. The young woman made him read the letter aloud, confess that he had written it, and apologize publicly to her. Then the citizens told him to leave town at once, after which they dispersed, feeling that the honor of the city had been sustained. Who says that the age of chivalry is past?

AGE TOLD BY TEETH.—A young man in Chicago, age 22, was engaged to be married, but there was a "dark horse" in the race, a veterinary surgeon. One evening the two were at the home of the bride-elect, and a discussion arose as to the proper age when a man should marry. The "vet." declared that the teeth were a sure guide in the matter, so at the girl's solicitation he examined those of the prospective husband, and declared that he was much too young to be married. His fiance thereupon threw him over, and the unfortunate victim of horse-play threatens to bring suit to recover damages for a broken heart.

ILLEGAL PRACTITIONERS.—The state dental boards have been making things lively since our last issue. Last month six men in Cleveland were indicted for practicing dentistry without a license; three in Toledo were each fined $25 and costs for the same offense; two students at Nashville, Tenn., were indicted and arrested, papers were served on a man at Virden, Ill., and on another at Colorado Springs, Colo. An individual at Pontiac, Mich , was arrested for practicing dentistry without a license on the employes of various factories, and a dentist at Lebanon, Pa., on Jan. 6, 1902, was fined $150 and costs for failure to hold a license.

FATALITIES.—A young woman at Gray's Lake, Ill., went to a dentist this month to have some teeth extracted. Chloroform was administered and the work was done, but the patient remained unconscious for three days and finally was revived just as her relatives were making the funeral arrangements. A man at Camden, N. J., died last month from blood-poisoning. The attending physicians claim that death was caused by the extraction of a tooth, which brought on the infection, but the dentists of the city are protesting vigorously, and state that the victim died from albuminuria. A man at Loyal, Wis., died last month from blood-poisoning arising from a fractured jaw, which was broken during the extraction of a third molar.

COLLECTION POSSIBLE.—In the December DIGEST, page 1054, we stated that a dentist in Iowa recently lost a suit which he brought to enforce payment for services, because it was discovered that he was not licensed and had therefore violated the law when he did the work. A similar case came up last month in Wisconsin, where a dentist was suing a patient to recover payment for services rendered. The defendant's attorney discovered that the dentist did not receive his license until three months after the work was done, and so he was practising dentistry unlawfully. The court held that the statute merely imposed a penalty for practising dentistry without a license, but did not prohibit recovery for services rendered, and he ruled further that the testimony was not permissible under the pleadings.

BITING THE FINGER NAILS.—Generally individuals who are addicted to this habit show symptoms of degeneracy. They present undergrowth, are slow, drowsy, unreliable, and have defective teeth. The treatment of onychophazia is indicated and requires careful observation on the part of parents and physicians; in many individuals painting the finger-nails and the tissues around them with tincture quassia has brought good results. The extreme bitter taste of quassia prevents the child from putting the finger in the mouth, and in many instances we know a cure to have been effected.—*Med. Record.*

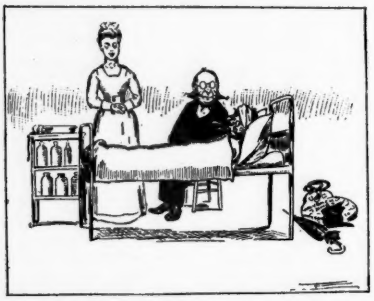
ACUTE SUPPURATIVE PERICHONDRITIS OF THE NASAL SEPTUM.—M. Lubinski describes two cases of this unusual affection. One patient was a boy of twelve and the other a middle-aged woman. In the one case no cause for the trouble could be found, while in the other it was ascribed to the large number of carious teeth in the patient's upper jaw. In both the symptoms consisted of swelling and tenderness of the entire organ, with the development of an acutely sensitive tumor of the septum. In each instance relief was afforded by ample incision and drainage with curetting, though the septum was left sufficiently damaged to produce marked flattening of the member with sinking in of its dorsum.—*Deut. Med. Woch.*

THIRD DENTITION WITH A VENGEANCE.—An individual styling himself "Dentist" has sent the following report to a leading English newspaper: "An old lady of seventy years had been toothless for many years, wearing a full set above and below. Recently she complained of her gums being painful, and upon examination I found that she was cutting a new set of teeth. In a short time she cut entire new dentures above and below and the teeth all seemed to be sound and firm. The strangest thing of all was that one of the new teeth had a gold filling in it. In a molar on the lower left side a piece of gold about as big as a match head was found roughly but solidly imbedded in the crust of the tooth. The only explanation was that the lady several years ago swallowed a gold filling which came out of her second set of teeth, and it worked around in her body until it came out in the remarkable manner indicated." Verily, truth is stranger than fiction.

ACID-FAST BACILLI IN GANGRENE.—Alberto Folli writes of a pseudo-tubercular bacillus whose presence under certain conditions may cause diagnostic errors. Frankel, Pappenheim, Rabinowitsch and others have found these bacilli in cases of pulmonary gangrene. Laabs found them in deposits on the teeth, Moller in the sputum in a case of simple bronchial catarrh, Dietrich in a suppurating ovarian cyst, Karlinski in the nasal secretion in a case of tertiary syphilis. The writer himself found them a few years ago in the sputum of a youth who died presumably from tuberculosis. At the autopsy gangrene of the lung was found, but no trace of tuberculosis. He reports three recent cases of gangrene in which acid-resisting pseudo-tubercular bacilli were found. The bacilli were not alike in every case, but were alike in resisting the decolorizing power of acids. The author does not deny the possibility of a cure of tuberculosis, but he thinks that in many cases diag-

nosed as such the presence of these bacilli may have led to error.—*La Riforma Medica.*

REVOCATION OF LICENSE TO PRACTICE.—The Court of Appeals of Kentucky recently decided, in Matthews *vs.* Murphy, that the State Board of Health had no right to revoke a physician's license for unprofessional conduct, not because such a right might not be made legal by proper legislation, but because it had not been. The court held, and we believe very justly, that the changing opinions of different boards as to what constituted unprofessional conduct in any given case were too uncertain a factor to jeopardize a man's legally acquired right to practice his profession. It held that the statute which gave the board the power of revocation should have specified the acts that such board could decide to be unprofessional and detrimental to the public interest by virtue of them stamping their perpetrator as a man unfit to be trusted with the responsibilities of the health and life of individuals.—*Med. Council.*



JOSHUA WAYBACK.—"Automobeel, wuz it? I thought it wuz a hoss wagin goin' back end to, and this is th' fust I know sence!"

NAVY DENTAL BILL.—A bill to add dental surgeons to the medical corps of the navy was introduced January 8, 1902, by Mr. Pettus, in the Senate of the United States, and was read twice and referred to the Committee on Naval Affairs. The bill is numbered S. 2519, and is as follows: "*Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,* that to the medical corps of the navy there shall be attached a corps of dental surgeons to serve the officers, enlisted men, and boys in the naval military service and training schools, which corps shall not exceed in number the proportion of one to one thousand authorized by law for said service and schools.

"The said dental corps shall consist of three grades, designated assistant dental surgeon, passed assistant dental surgeon, and dental surgeon, and with respect to rank, pay and allowances and to promotion within said dental corps, the grades named shall correspond to the grades of the Medical Corps designated assistant surgeon, passed assistant surgeon, and surgeon, respectively.

"Sec. 2. That original appointments shall be made to the grade of assistant dental surgeon and the appointees must be citizens of the United States, between twenty-three and thirty-three years of age, graduates of standard dental colleges, with not less than two years' subsequent experience in practice, of good moral character, of unquestionable professional repute, and shall be required to pass a satisfactory physical and professional examination: *Provided*, That there shall first be selected a member of the dental profession who is a graduate of a standard dental college and whose aptitude and experience evidence eminent fitness for conducting the professional examinations herein provided for, and for otherwise assisting in organizing, equipping, and supervising the operations of the corps, who shall be first appointed to the grade of dental surgeon."

PRURITUS SENILIS LINGUÆ.—E. Baumgarten describes a case of senile pruritus, which first manifested itself in the tongue and was treated without relief for some time before the true nature of the trouble became evident through the occurrence of itching elsewhere. This condition is so rare that the diagnosis is justifiable only after all other possibilities have been inquired into and excluded. There are many systemic conditions capable of producing subjective symptoms in the tongue without visible lesion, but nearly all of these may be relieved by appropriate treatment, while true pruritus is not amenable to remedial measures. The more important of such causal conditions are affections of the stomach, intestines, liver, kidney, and spleen, all circulatory disturbances, and trouble with the pelvic viscera, especially in women about the climacteric.—*Muench. Med. Woch.*

BLOOD CHANGES INDUCED BY THE ADMINISTRATION OF ETHER AS AN ANESTHETIC.—J. C. DaCosta and F. J. Kalteyer draw the following conclusions: (1) The number of red corpuscles is influenced by many factors associated with and accompanying the anesthetic state. The character of this change is, as a rule, a polycythemia; rarely, an oligocythemia. (2) The nature of this polycythemia seems best explained by a lessening of the watery elements of the plasma, thereby reducing the total volume of the liquor sanguinis, and consequently causing concentration of the blood. (3) The three important factors incident to the polycythemia are: (*a*) The period of preparatory operative treatment; (*b*) the anesthetic state; and (*c*) the postoperative stage. (4) The blood inspissation is, as a rule, most pronounced immediately after the termination of the anesthetic stage. (5) The hemoglobin is always reduced absolutely; in some instances there is an apparent increase, but this rise in the percentage of hemoglobin is never parallel with the rise in the number of red blood cells. The individual corpuscular hemoglobin value is therefore reduced. (6) The duration of the anesthetic state and the amount of ether may influence the blood changes; but the extent of the disturbance could not be determined on account of the many modifying factors. (7) The amount of hemorrhage does not seem to affect the composition of the blood. (8) On account of the hemolysis, which is shown by the fall in corpuscular hemoglobin after operation, a very low percentage of hemoglobin must be regarded as a contraindication to the administration of a general anesthetic. Below fifty per cent is a dangerous level.

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